ELECTRICITY ON THE FARM *Magazine*

MARCH, 1952

Whats and Whys of Infrared
Better Milk Handling Methods
Equipment News for '52 . . .
Farm Shop—Good Investment
Dishwasher Test Revelations

25th Year . . . No. 3

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GENERAL ELECTRIC FarmNews

Ask for G-E Motors and Control on all Electrified Farm Equipment you buy!

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RADIANT HEAT REDUCES CHICK LOSSES!

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Even in areas of high annual rainfall, farmers agree that supplemental irrigation pays off in increased crop yield and quality. They agree, too, that for reliable, low-cost service you can't beat electrically driven pumps. Whether you're replacing an old pump or installing a new one, be sure it's equipped with a G-E motor. For more information, check "Irrigation Pump" on the coupon.

On truck crops, pasture, or home gardens, supplemental irrigation pays off.

New method of brooding cuts mortality, produces faster-feathering chicks for N. Y. broiler grower

From 100 to 125 chicks per lamp can be brooded with an infrared unit like this, depending on geographical location, season, and house construction.

Dave Roach, Albany, N. Y., is one of many enthusiastic boosters of radiant heat brooding. He uses G-E infrared lamp brooders over the floor and G-E heating cable under it, and finds this type of heat keeps the litter dry, thus controlling disease germs and reducing mortality. "Moreover," says Mr. Roach, "my chicks feather faster, and have keen appetites that produce faster growth."

Use either or both

When used alone, either thermostatically controlled infrared lamps or heating cable (in some circumstances) furnish satisfactory brooding temperatures, but in nothern states a combination of both is recommended. Regardless of which heat source is used, G-E infrared lamps, heating cable, and thermostats assure economical dependable service with a minimum expenditure of time and labor. For more information, check "Radiant Heat Brooders" on the coupon.

BARN CLEANER SAVES 2 MAN-HOURS PER DAY!

"Barn cleaning used to be a 1½-hour job for two men," says Mr. Kooistra, who has a 400-acre dairy farm near Alden, Ill. "Now," he continued, "with the help of my electric barn cleaner, two men can do the same job in 20 minutes. That amounts to a saving of over 2 man-hours a day."

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Barn cleaners run quietly and can be installed in barns of any shape. Like many other models on the market today, Mr. Kooistra's barn cleaner is equipped with a General Electric motor and G-E starter for "on-the-job" dependability and long life with minimum maintenance. For more details on this electrical worksaver, check "Barn Cleaner" on the coupon.

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Editor's Chat

TAXES ARE TOIL

We need no reminder that Saturday, March 15th, is Federal income tax day. It provokes the American people to more exasperated words and more frustrated thoughts than any other day of the year.

Politicians and some economists deal in so much double talk about taxes that we sometimes become a bit confused. Expenditures and requests in terms of five, ten, and even 85 billions of dollars roll off the tongues of the bureaucrats like water flowing out of the end of a hose. Talk of billions is so common today that the words million and billion are often confused with each other. Probably this is because neither a million nor a billion can be understood by most of us.

How much is a billion dollars? Our total income for 1951 was approximately 265 billion, or about one billion for each working day. So for the 62 million of us who worked for a living last year, a billion dollars was our combined income for one day.

So whenever Congress appropriates a billion dollars they are appropriating an entire day's income for every man and woman who is earning a living in this country. The average appropriation for the past three years was 77 billion. Our President's budget for the next fiscal year calls for 85 billion. So there's a pretty good chance that on March 15, 1953 our tax will account for even more days of our labor. Is there a limit or not?

Taxes are necessary to run our government. But, we should be very much interested in whether or not our labor will be wasted. According to Congressional investigations for the past year or so, the waste of our labor is very evident. You can rest assured that every time the R.F.C. makes a bad loan, when a crooked revenue collector juggles the books, or when a few million bushels of grain bought by the government disappears, it's costing us money, and plenty of it. The needless waste of our military cannot be overlooked either.

With the tremendous cost of our defense program (about 65 billion is requested for the next fiscal year), it would seem logical that certain domestic programs could be curtailed sharply or eliminated altogether. Sure, the records reveal minor cuts here and there. But what government agencies have been eliminated?

The President's budget presented to Congress in January ran to 1,222 pages of fine print. There are just 1,214 pages in the dictionary on my desk—a sizeable book! If Congress had worked exclusively on the budget 40 hours a week since the time the President submitted it and if it continues up until July 1st when the new spending year begins, it could devote only about an hour to each 100 million it is asked to appropriate. But Congress is the constitutional guardian of the purse strings, and unless Congress tightens up we can't expect economy in government. Every dollar that is appropriated must either come from taxes or be borrowed. If it is borrowed our taxes must help pay the interest.

You might say that as individuals, the fruits of our labor are not required to pay all the taxes. This is where we lose sight so often. The price that we pay for a product, whatever it might be, includes the accumulation of taxes collected all along the line. So it's you and I who pay regardless of how it's flavored. We pay taxes practically every day of the year, not just on March 15th.

A FARM SHOP SAVES

Those production goals you have this year, WOW! With labor scarce as hen's teeth too. There's also some question about a plentiful supply of farm machinery and equipment. Let's hope there will be ample equipment. But in any case a well equipped farm shop will certainly pay its way. Prof. Kugler of Kansas State College offers some very good advice in this issue on the economics of a farm shop and the use of certain equipment.

Jim Ridout

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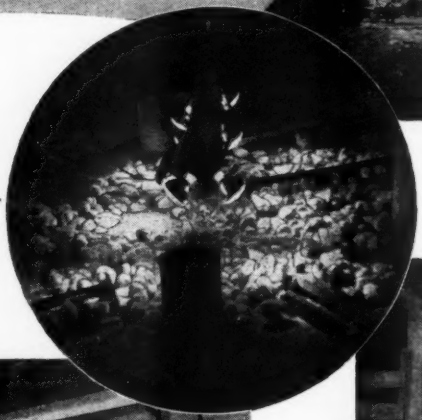
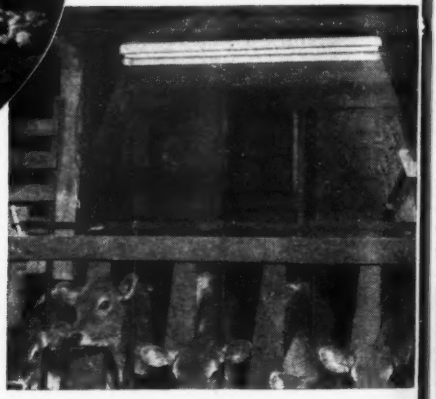
Westinghouse Heat Lamps are ideal for brooding chicks, calves, lambs and pigs. Mortality will be lower. Health should be better. Costs little to install and operate. Clear glass for ordinary use, $1.10. Spatter-proof ruby glass to resist breakage from water, $2.95.



Give calves and poultry benefits of Vitamin D radiation with Westinghouse Fluorescent Sun Lamps. Promotes growth, weight gain, egg production. Two sizes, fit 20 or 40-watt standard fluorescent fixtures.



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Gives step-by-step details of how to build 23 useful electrical projects. Excellent as projects for 4-H Electric Program. Ask for your copy "Electrical Farm Equipment You Can Build".

Milk Handling Methods are Changing

Pipe Line Milkers and Cold Wall Bulk Cooling Milk Tanks Can Eliminate Milk Cans and Pails. They Can Pay for Themselves Out of Savings.

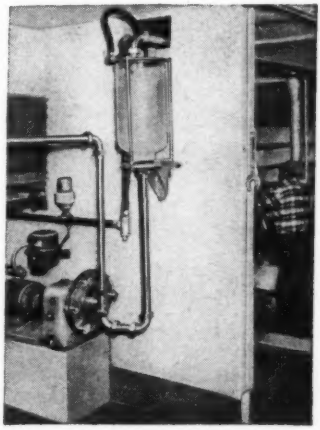
Each time you lift a milk can into the cooler you're handling 22 pounds for nothing. It makes no difference whether there's 8 or 80 pounds of milk in it. The can always weighs the same. Take it from the truck and set it on the can rack in the milkhouse. Then move it from the can rack to the floor. Floor to cooler—cooler to floor—floor to truck—whew! That's five handlings a day! One hundred and ten pounds of milk can to carry less than a hundred pounds of milk. How many pounds of pail do you suppose you handle to carry that milk from the barn to the milkhouse?

Would you like to turn that handling job over to equipment you now own? Your milking machine's vacuum pump can do it. It's doing the squeezing now. It can take over the heavy lifting, too. Here's the way it's done.

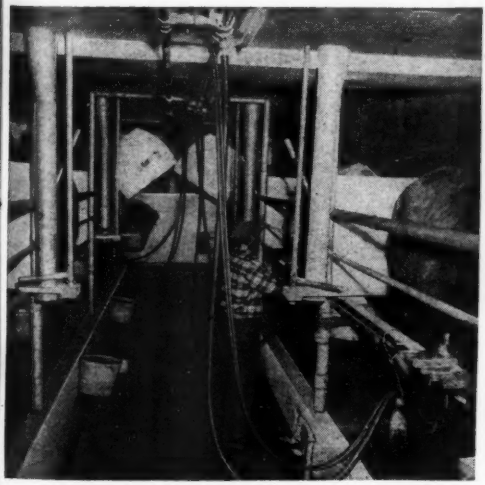
Nature hates a vacuum. When you drink milk through a straw you create a partial vacuum, in the straw. To eliminate the vacuum, nature forces the milk in to take its place. The same thing happens with a milking machine. The milk follows the vacuum created in the milker tube and runs into the pail. If you let the pail get full the milk will flow back through the piping to the vacuum pump. You may have had this happen. If so, you've seen a demonstration of how the vacuum pump can take the heavy lifting out of milking.

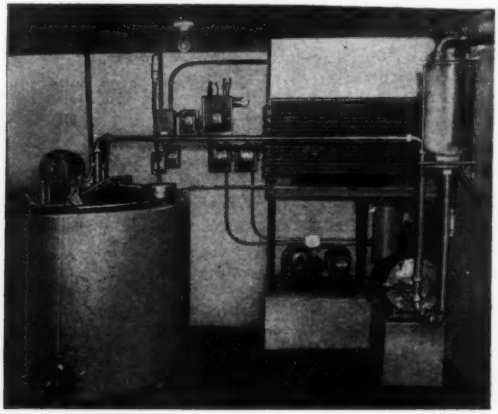
First, sanitary pipes are installed in addition to the regular vacuum piping. These can be stainless steel or the new less expensive glass pipes which have just been developed. They will replace the pail in your milking operation. Instead of letting the milk collect in the milker pail next to the cow, it is drawn directly into the sanitary pipeline. It then follows the vacuum through the pipe to a receiver. Here the milk's flow is interrupted. Instead of letting it go on to the vacuum pump, it is drawn off.

Now the receiver may consist of one or more milk cans. It is located in the milkhouse. The vacuum has drawn milk all the way from the cow,



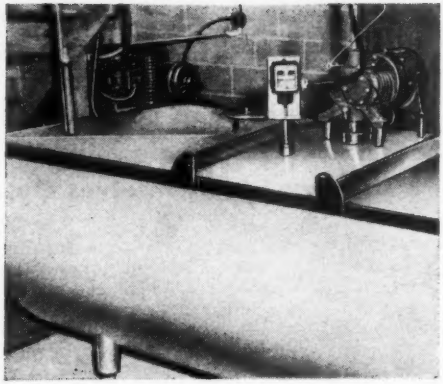
Here is the receiver in the Quinby milkroom. The milk is taken from the receiver by a ¾ hp diaphragm pump which transfers it to the cooler.





Left: Robert Trudell milks 30 cows in an hour on the Quinby farm at Copake Falls, N. Y. Here is the milking parlor. Note the pipeline (at top) into which the milk is drawn. **Above:** Isn't that a beautiful milkhouse? The milker vacuum pump, and the cooler's compressor are located on a neat concrete pedestal. The cooler, here, a 200 gallon round tank, has a ¼ hp gear motor driven agitator. The compressor is a 3 hp unit.

Below: Harry Hilpertshauser takes a look at the measuring rod in their 530 gallon cooler. He feels that this method of measurement is much more accurate than the older methods with cans. What's more, their fat test has increased 0.1% since this tank was installed. Note hole (behind Harry) through which tank truck hose is connected to the milk cooler.



Another view of the Hilpertshauser tank. The refrigeration compressor, driven by a 3 hp motor can be seen in the further corner of the milkhouse. Directly on top of the tank you can see the ½ hp gearmotor that drives the agitator. The control in front of the gearmotor is the thermostat that controls the compressor.

eliminating any handling of pails. If the receiver cans are placed in the milk cooler, and filled there, another heavy lift is eliminated. But, you'll still have to handle the cans. Let's eliminate them, too.

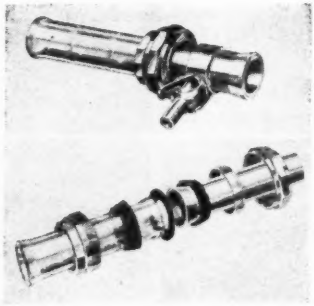
A great deal of fluid milk is now transported from the country to the city by tank truck. You may take your cans in the pick-up truck and deliver your milk to a small country plant. A short while after you've driven back to the farm, with the empty milk cans, the tank truck goes by. It's hauling the milk you just hauled, right back by your place on its way to the city. Do you suppose it could stop at your place so you wouldn't have to haul your milk at all? Well, it can. What's more, it's being done. And in the process, it's eliminating the milk can.

We mentioned the receiver in the milkhouse—that it might be milk cans. In place of them we'll substitute a glass receiver. It provides a collector that would have to fill up before the milk could flow on to the vacuum pump. But, we don't let it fill up. We drain the milk, or pump it, directly into a new type of cooling tank.

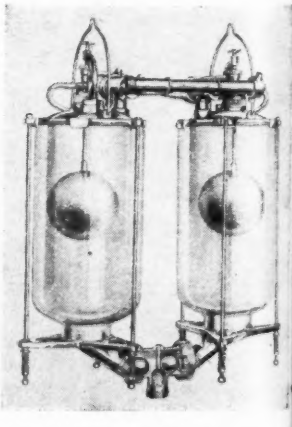
These new tanks are lined with stainless steel. Refrigerant coils surround the liner. The milk flowing down the wall of the tank, is cooled as rapidly as it enters. The tank is covered and the milk is held there until the tank truck arrives. Your milking machine has now taken the milk from the cow and placed it, under refrigeration, in a tank. It will be drawn into a tank truck by a pump. And you have eliminated the need for pails or cans.

The milk handling methods described here are not in the dream stage. They're in operation in many different parts of the country. The use of loose housing with a milking parlor and its pail-less combine milker has had wide acceptance. And with the acceptance of pipe line milking, it was natural that it should be extended to stanchion type barns. Today you can find barns that are completely equipped with sanitary piping that carries the milk directly from the cow to the milk house.

What are some of the benefits that can be obtained with such a system? First, of course, comes the saving in labor. The Sidney Quinby farm in Copake Falls, New York, is an excellent example of efficient operation. From the homemade pit silo to the cattle housing sheds and milking parlor, everything has been designed to reduce labor. The milking parlor has two 4 place walks through milking sta-

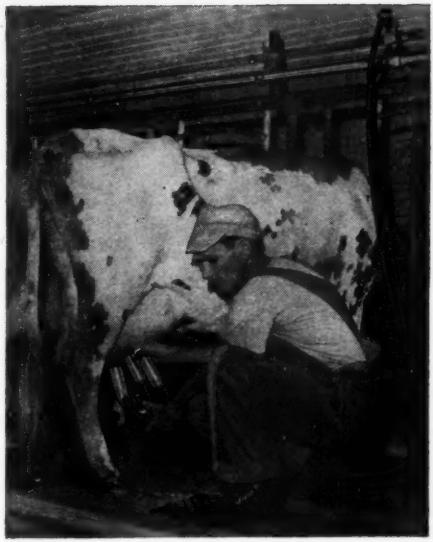


Above: At top is a section of the new glass sanitary pipe connected to a stainless steel cock. Bottom picture is an exploded view showing the neoprene gaskets and washers that make the seal for the fitting. The glass pipe is appreciably cheaper than stainless steel. **Right:** These are alternate receivers. Milk flows into one raising the float. This diverts milk to other receiver and breaks the vacuum allowing milk to drain past check valve at bottom. When empty, vacuum recloses check valve. In the meantime milk has been flowing into the other receiver, when filled, empties in the same way.



tions. The operator stands in a pit between the two and grains and prepares cows on one side. At the same time, those on the other side are being milked. The entire process of graining, preparing and milking 30 cows, takes one man just one hour. And, at the end of that hour, all that milk is already safely stored at a cool temperature in a refrigerated storage tank. What's more, the cow is the only one that carried any of that milk.

Next under benefits come increased accuracy of measurement and test. Spillage is eliminated. The usual 3 fluid ounces of milk that clings to the sides and top of the milk can is no longer lost. Incidentally, due to the cream that adheres to the top of the can, those 3 fluid ounces will range from 8 to 10½% fat. Consequently, fat tests can increase as much as 0.1% when cold wall bulk tanks are used.



Left: At the Ray Johnson & Son Dairy Farms in Hollywood, Florida, three men milk 220 cows (2 x milking) in 3½ hrs. Five pailless units, as shown here, are used. Note the sanitary pipe line below the vacuum line. **Below:** Instead of going into a cold wall tank, the milk, at the Johnson Farm, flows over an aerating cooling board. From there it runs directly into their tank truck. Bacteria counts as low as 3,500, well below the 15,000 standard for certified milk, are obtained.

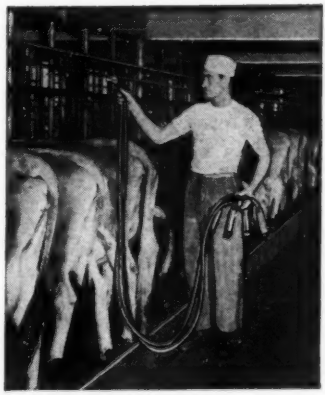
Method of Sampling

To assure accurate tests, the pick-up tank truck driver runs the propeller type agitator in the tank for from 3 to 5 minutes before sampling. One sample is left in the milkhouse for the producer and a second one is taken back to the plant for test. The quantity of milk is determined by a measuring rod. These measuring rods are tailor made. When the tank is installed, a rod is very carefully measured and marked with divisions for use with that tank only. For this reason there is never any question about the amount of milk shipped. The truckman notes the quantity on the delivery ticket, a copy of which is retained by the farmer. The milk is then pumped into the tank truck. The pump for this purpose is carried in a refrigerated compartment of the truck.

Another benefit is the reduction of hauling costs. With the low bacteria counts resulting from such methods of handling, every other day pick-up at the farm is possible. This, naturally, will reduce transportation costs.

Finally, there can be a great saving for the dairy industry in the elimination of country receiving plants. The money tied up in the operation of these plants is sizable.

Naturally this type of handling will not immediately replace the older methods. Nor is it necessary to go "whole hog" if you want to make a change. Although the pipe line milker and bulk cooler are natural companions you can use either one without the other. And either one of them can save labor for you.



The only milking equipment they carry to the cow at James Gianolio's Dairy in North Miami, Florida, is a conventional teat cup and pulsator unit. The pipeline carries the milk. With 492 cows to handle that pipeline saves a lot of lifting.

At first, you might think that pipe lines to replace pails would save carrying the milk but give you a bigger clean up job. However, the pipe line is not taken down daily. It is rinsed and chemically sterilized by flushing the solutions through the lines after milking. This is quick and simple. The low bacteria counts achieved with this system prove that it is effective.

What about cleaning the cold wall tank? Isn't that a hard job? No, the truckman rinses it with cold water as soon as the milk is drawn off. This leaves a simple cleaning job for the farmer. On the Hilpertshauser farm at . . . . . (Continued on page 31)

Whats and Whys of Infrared Brooding

Common Questions and Their Answers on the Subject of Infrared Brooding

Electric brooding with infrared lamps has literally taken the country by storm. There are several reasons why this method of brooding has become so popular. The initial cost is low; hovers are not essential; the chicks can be seen without moving any of the brooding equipment; the brooding units don't actually occupy any valuable floor space; infrared brooder units can be stored easily.

Infrared brooding offers many advantages, but the conventional hover type electric brooder will brood chicks with less electrical energy. About 1 KWHR of electricity is required to brood a chick to 8 weeks under a conventional hover where the infrared energy consumption might reach 3 or more KWHRs, depending, of course, on the weather.

Since there is considerable interest in infrared brooding at this time, we thought that you would be interested in some of the questions asked us about it, and our answers to these questions.

First of all, what is infrared?

Infrared rays are a form of radiant energy. They have the ability to heat objects without heating the air through which they pass. The infrared lamp emits this type of radiant energy. Any object placed within the lamps' rays will be warmed. It is the same type of heat given off by the sun.

Is it necessary to build a special brooder house when using infrared lamps?

No. The same brooder house that you have used with other types of brooding will be satisfactory. The brooder house should be fairly tight.

A low initial investment was the thing Delmar Stutzman of McMinnville, Oregon, was looking for when he started brooding with these home-made infrared lamp units. He and his partner, Robert Parr operate a 10,000 chick-broiler enterprise. Each unit consists of a 2 x 4 six feet long with six 250 watt infrared lamps placed in pairs 30 inches apart. They are suspended by wire from the ceiling. No thermostats are used. If full heat is not required some lamps are turned off, manually. Each six lamp unit takes care of 500 chicks. Parr who takes care of the chicks says "we like the unobstructed visibility provided by the infrared lamp units."

How much floor area should be allowed per chick?

From 7 to 10 square inches in the brooding area. Overcrowding is usually responsible for many management problems leading to a high mortality rate. The brooder house should have at least ½ square foot of floor area per chick. A 10 x 12 foot house would accommodate about 250 chicks.

Is it necessary to use a hover when brooding with infrared lamps?

No. It is only fair to say, however, that heat can be more concentrated when a hover is used. A hover also tends to decrease drafts around the chickens. About 25% more chicks can be brooded per lamp with a hover.

Is it necessary to heat the air or maintain certain temperatures in the entire brooder house?

No. Various experiments have revealed that it is not necessary to maintain a high temperature in the brooder house. Chicks have been successfully brooded in refrigerated rooms where the air temperature was 10 degrees below zero. Infrared lamps provided the heat for the chicks.

In what wattages can infrared lamps be obtained?

These lamps come in three sizes. They are, 125 watts, 250 watts, and 375 watts. They are directly proportional as to the radiant energy transmitted. Saying it another way, two 125 watt lamps may be equivalent to one 250 watt lamp. You would not, however, get as high a concentration of heat in one spot using two 125 watt lamps as you would with one 250 watt lamp. The same is true, of course, for the 375 watt size. If five 375 watt lamps are used, spaced about 30" apart on the circumference of a 4 foot circle, they will brood 500 chicks just as well as eight 250's according to tests in New Hampshire last winter. Temperatures, at that time, were as low as 14 degrees.

What is the difference between hard and soft glass lamps?

A soft glass lamp is cheaper than those made with hard glass or "pyrex." However, a drop of moisture falling on the soft glass

lamp when it is hot, can break it. If a hover or baffle is used, soft glass lamps will give satisfactory service. If you're not planning to provide any protection for the lamp a hard glass lamp should be used.

Is there any difference in the heat transmitted from a white and red lamp?

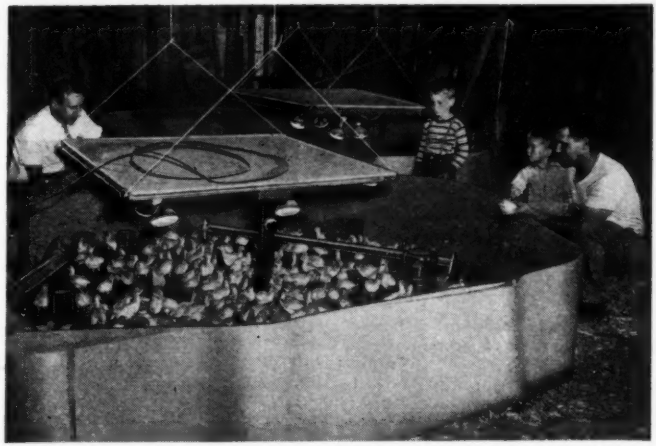
For a given wattage, there is no difference in the radiant energy transmitted by the red or white lamp.

What is the advantage, if any, to mounting the lamp at an angle?

When a single lamp is used there is no advantage. When two or more lamps are used, a wider heated area will result if they are set at an angle to each other. They will also provide a wider variety of comfort zones.

How many chicks will one 250 watt lamp take care of?

A range of 60 to 100 chicks per lamp is recommended. It depends on whether the brooding is to be done in winter, spring, or summer. Eight 250 watt infrared lamps will supply sufficient energy for 500 chicks under severe winter brooding conditions. On small broods, a minimum of 2 lamps is usually recommended. In the event that one burns out, the chicks would not be left without heat or light.



Emory Bowman of Mt. Union, Va., brooded 1200 turkey poults with infrared lamps last spring. The turkeys were raised under four brooding units in the mow of an old barn. Building paper was used on the walls and the floor to cut down on drafts. Each unit had four 250 watt infrared lamps, two of which were controlled by a thermostat. The other two were on at all times. Using material available on his farm, Mr. Bowman installed these brooders for less than $10.00 apiece. The brooders were suspended 20" above the litter for the poults. They were raised 2" a week. In the past, Mr. Bowman has raised turkeys under wood, coal and conventional electric brooders. However, he likes his infrared brooders because he can always see the poults. It is very easy to excite turkeys. By eliminating the need for lifting brooders to see the poults, this source of excitement was eliminated. He also noticed that the poults did not pile up as badly as with other types of brooders. The electricity consumed amounted to 1⅓ Kwhr per poult.

Under-floor heating with soil heating cable is also becoming a very popular method of brooding. This installation is located on James P. Beamer's farm at Calhoun, Georgia. He has three 40' x 216' houses and is constructing three more. Each house will accommodate 12,000 chicks. There are six 8' x 20' heating slabs in each house. Hovers are placed over these slabs as shown. The slabs contain four heating cables thermostatically controlled. Each cable is 160 feet long, 800 watts each, and operate on 230 volts.

If you do brood with just one lamp, have an extra one on hand.

How should infrared lamps be suspended?

They should be suspended by chain, wire, or brackets. The conductors leading to the receptacle should not be relied on for support. It hardly seems necessary to provide special support for a single lamp, but it is a good safety practice.

What procedure should be followed in raising the lamps as the chicks grow older?

You should start with the lamp 18" above the floor. They should not be raised more than 1" a week or 2" every other week. There is no real necessity for raising them the first week or two. No advantage is gained by raising the lamps higher than 24 inches. It is good to have a hot spot directly under the lamp, preferably a little bit too warm for the chicks. A chilled chick can move into this spot, warm up quickly, and then find out it

is too warm to stay there. After that the chick moves out to a spot to suit its individual comfort. This leaves the hot spot empty and eliminates the possibility of a pile-up in the middle.

Is it necessary to have a thermometer?

No. The chicks seek the zone of heat that is comfortable to them. They are the best indicator of proper temperature.

Are special controls required for infrared lamps?

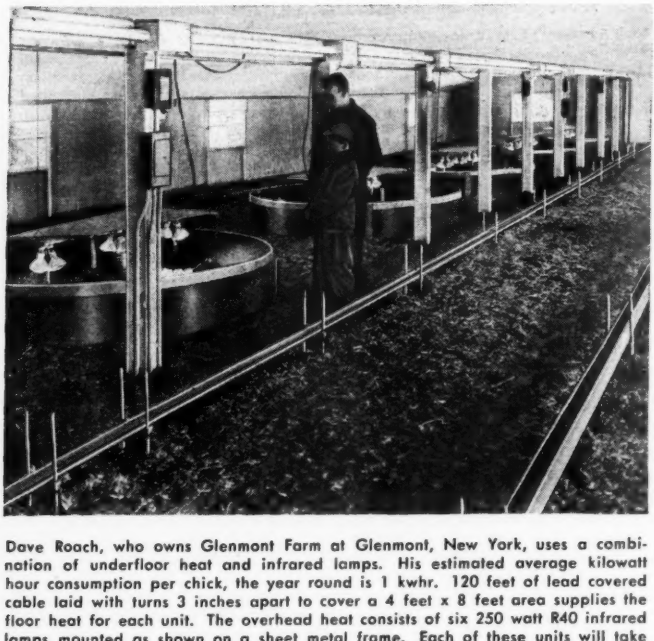
No. Lamps can be left on all the time.

Is infrared brooding different than other types of brooding?

Yes. Conventional brooders supply heat to maintain a fixed temperature under the brooder hover. Infrared lamps supply heat to the chick only. The amount of heat they provide should be the difference between that which the chick produces and the amount it needs. For this reason, thermostats to control the lamps are not placed where the infrared rays will strike them. They are operated by room temperature only. Thus, during the day when sunlight warms the brooder house, the thermostat will shut off some of the lamps. That is because the difference between the heat the chick provides and what it needs is decreased.

Can operating costs be reduced by turning lamps off part of the time?

Yes. Four 250 watt lamps burning for one hour would use 1 KWHR of electricity. If this heat were not needed for the entire hour, some electricity would be wasted. However, all of the lamps should not be cut off at one time. Researchers tell us that the absence of the light causes more panic among the chicks than the absence of heat. If you are using two or more heat lamps, some can be turned off manually, or by means of a thermostatic switch, as temperatures within brooder house rise. Some of them should be left on twenty-four hours per day.



Dave Roach, who owns Glenmont Farm at Glenmont, New York, uses a combination of underfloor heat and infrared lamps. His estimated average kilowatt hour consumption per chick, the year round is 1 kwhr. 120 feet of lead covered cable laid with turns 3 inches apart to cover a 4 feet x 8 feet area supplies the floor heat for each unit. The overhead heat consists of six 250 watt R40 infrared lamps mounted as shown on a sheet metal frame. Each of these units will take care of 600 chicks. The cable and four of the six lamps are thermostatically controlled. A continuous flow of water is available in the trough at left. The trough at the right is part of the automatic feeder.

Can infrared lamps be controlled with a thermostat just as any other type of electric brooder is controlled?

Yes, a thermostat can be used to control infrared lamps. The regular wafer type thermostatic snap action switch is suitable. Turning off the electric power when it is not needed, will reduce the cost of operation. The wattage in lamps on any single switch should not exceed the switch's rating. When less than 3 lamps are used in the brooding unit, the extra cost of the thermostat is not justified.

Can an infrared brooding unit be plugged in on a regular wiring circuit?

Yes, if you're only using one or two lamps. But, if you're planning to use several lamps, in any one location, a special circuit for them is needed. Six 250 watt infrared lamps make a total load of 1500 watts. On 110 V. current, they will need their own No. 14 wire, 15 ampere circuit. Eight 250 watt infrared lamps will require a No. 12 wire, 20 ampere circuit. Add up the wattage of all the lamps on one unit. If the wattage total is under 1650, a 15 amp circuit is adequate. For larger units, up to 2200 watts, plan on using 20 ampere circuits. The electric service to the brooder house must have sufficient capacity to handle the total electric load planned.

What kind of a socket should be used for an infrared lamp?

A non metallic keyless socket should be used. It must be able to withstand the continual high temperature present at the base of an infrared lamp. A porcelain socket is most generally used for this purpose.

Is wet litter a problem with infrared brooding?

Not necessarily. Good management plays the most important role in the prevention of wet litter.

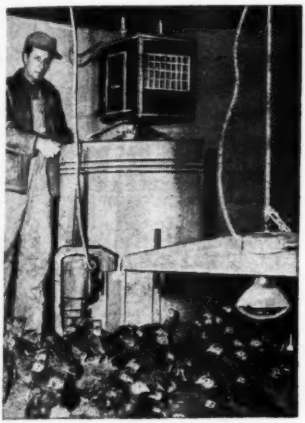
A warm floor is helpful. Board or bank around the building so you will not have drafts under the floor. It is also a wise preventative to provide double floors with paper between. Be sure the walls close to the floor are tight so there will be no

floor drafts. Generally speaking, there is no litter problem with small broods. In large installations, electric ventilating fans may be needed to carry off moisture laden air.

Without baffles or hovers, how are drafts controlled with infrared brooding?

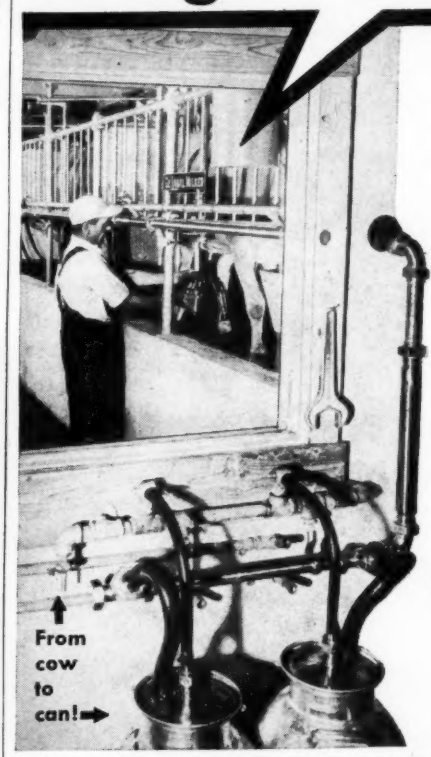
First of all, the brooder house should be tightly constructed. In a loosely constructed house you're bound to have drafts. To protect the chicks, a fence of cardboard or wood, 12 to 15 inches high, should be placed around the comfort zone to confine the chicks for the first week or 10 days. This temporary fence will keep drafts off the chicks

. . . . . (More on page 31)



Herbert Kenworthy, farm manager on the O. A. Keillor farm, 15 miles southwest of Albia, Iowa, likes infrared brooding. He says its better than any other type of brooder he's ever used. The Keillor farm uses infrared lamps supplemented by electric space heaters for brooding. At the present time, they have over 6,000 chicks under the lamps. Electricity also powers his automatic feeders, water heaters, and chicken picker. They really get all of the "juice out of the poppy" when it comes to marketing the broilers they raise. Mr. Keillor has his own restaurant at Berwyn, just outside of Chicago, Ill. The 500 broilers required by the restaurant each week are dressed right on the farm. He also supplies his store, located next to the restaurant, with broilers. To make sure that nothing is wasted, the refuse from the dressing plant is used as fertilizer on the farm.

Through this window...



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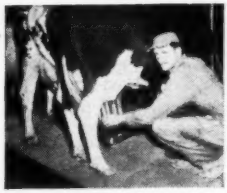

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Two More Pigs Per Litter

Alabama Farmer Raised 127 Pigs out of 132 With the Aid of 19 Infrared Lamps

"There's one thing for sure. I'll never go through another winter without 'em."

With those two statements, Ulmer C. Elrod of Etowah County's Union Community in Alabama very fittingly expressed his opinion regarding his experience in the use of infrared heat lamps for brooding pigs.

Except for a period of 37 months spent in the armed services during World War II, Mr. Elrod has been living on an 100 acre farm in the northern part of Etowah County for the past 15 years, the same farm that he began buying in 1947 and completed paying for this past fall. Prior to the war, most of his income, like that of the majority of Alabama farmers, was derived from the sale of cotton. Sure, he had always had a garden, had grown some corn, and had had a cow and enough hogs and poultry for the use of his family. But it just hadn't occurred to him to get his actual yearly income from any crop but cotton.

Shortly after his tour of active service with armed forces was ended and he returned to the farm, Mr. Elrod began to get a new slant on farming methods. He accepted a job in his locality as a veterans' training teacher and for the ensuing 3½ years spent considerable time looking into new farming practices and helping his trainees make the most of their efforts. Teaching required a great deal of time, however, and during the fall of 1950 he resigned his position as a teacher in order to again devote his full time to the business of farming.

During the time Mr. Elrod had been teaching, he had been keeping a brood sow and since he had been fairly successful in raising its brood each year, he decided that, with the increased time that he now had available, he might well look into the possibilities of growing hogs for profit. With this in mind he had kept five of his gilts for reproduction and by the time the last winter rolled around, he had six sows ready for farrowing. Of the 51 pigs that those six sows produced during December 1949 and January 1950, Mr. Elrod was able to save only 30.

This is rapidly becoming a common sight wherever there are brood sows and pigs. Infrared lamps are ideally suited to provide that extra warmth for young pigs. Infrared rays tend to comfort the sow before farrowing too.

Plans Developed

While Mr. Elrod was not entirely pleased with the results of the winter season, he was not discouraged and by this past December, he had in addition to the six another 19 sows ready for farrowing. This time he was ready for them. The principal source of trouble in raising the pigs seemed to be that they would try to get under the sow to seek warmth. In doing so, inevitably some would be injured. Mr. Elrod had heard of pig brooders which were designed to give a warm place for the pigs to relax, a place where the sows could not reach. During the year he had busied himself building a 125′ x 24′ galvanized iron house for the coming winter. The house was divided into 20 individual pens, each 10′ x 10′, with a walk down the center. Such a division allowed him to use almost a third of the new building for storing much of the corn harvested at the rate of 75 bushels per acre from 80 acres of well-fertilized land.

Mr. Elrod solicited the aid of E. E. Shelton, Alabama Power Company rural Service Engineer for that area, in planning for the installation of infra-red heat lamps to provide supplementary heat for the pigs. One heat lamp was placed in an inside corner of each pen, suspended from above by a drop cord. The area heated by the lamps was boarded off in such a way that

the sow could not get to the pigs when they were in the heated area, yet the pigs could come and go at will. Mr. Shelton recommended that the lamps be suspended not less than 18 inches above the litter.

During last winter (December 1950 and January 1951) all 19 of Mr. Elrod's sows farrowed. Not counting one brood where an excited sow killed her entire litter before they could reach shelter, 132 pigs were placed with sows in pens equipped with the heat lamps and only five were lost. Two of those three were mashed by sows other than their mothers. Mr. Elrod was so pleased with these results that he continued using the lamps even after the recommended period was up on the theory that the infra-red rays will not only speed the growth of the pigs but will help to keep them free of disease. He is convinced that his theory is correct and estimates that the heat supplied by the infra-red lamps enabled him to raise at least two pigs per litter more than would have been possible otherwise. The fact that while many of his pipes froze in the extremely cold weather during early January, warm water could always be found in the areas protected by the lamps also contributed greatly to the success of his hog project. Mr. Elrod is in the hog business to stay.

The last census tells us that the size of farms increased to 210 acres as compared with 174 a decade ago.

"Move over by the heat lamp, Mom; this milk's too cold to drink!"

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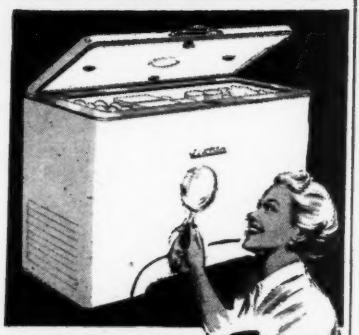

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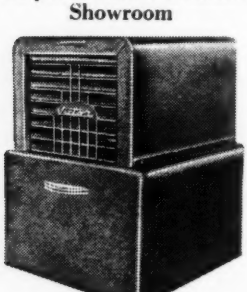

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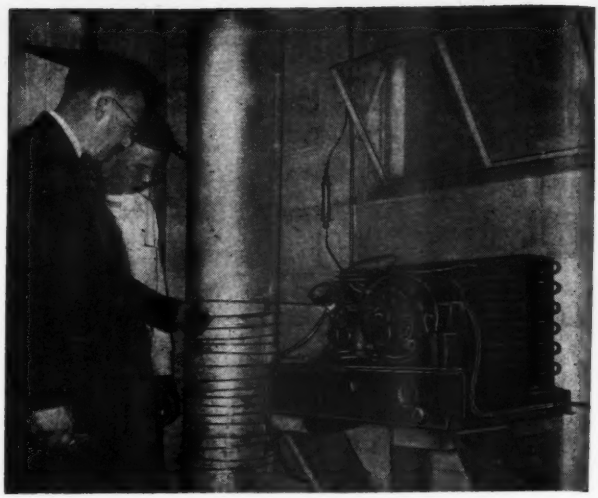

McGuire explains to young Joe McAvoy how heat pumped from fresh milk will provide hot water. Insulation for the water tank had not been installed when picture was taken.

Hot Water from Cold Milk

Milk Refrigerating Unit Provides Hot Water as a Bonus

By DENNIS McGUIRE†

Utilizing the heat from precooled milk to heat water is a new use of electricity that is being studied on a Michigan Farm. Tom McAvoy of Owosso, Michigan became interested in the production of Grade A milk.

Producing this type of milk requires the utmost cleanliness in the milking process and in handling the milk afterwards. Low temperatures to retard bacteria growth in the milk, and hot water for washing utensils are essential features. Plans were furnished Mr. McAvoy for the design of a 10'x14' milk house and for a walk-in type cooler of 11 cans capacity.

Other items included an electrically operated compressor, a sink for washing utensils, a precooling vat, a 30-gallon water tank and, of course, running water from a pressure system. The refrigerant in the cooler is circulated through 100 feet of half-inch copper tubing. This in turn, is connected to 65 feet of tubing that is coiled around the lower third of the 30-gallon water tank. Six inches of insulation covers the entire tank.

In operation, the milk is first filtered in the water-cooled vat and the temperature reduced to 60° F. From the cooling vat, the milk flows into 10-gallon cans. The cans are placed in the cooler where the milk temperature is further reduced to 40° F. The heat pumped from the cooler is circulated through the coils around the water tank and absorbed by the water to produce a temperature of 150° F. at the sink faucets.

Hot Water For Cleaning

While water of 150° F. is not hot enough for sterilization purposes, it is of ideal temperature to use with the chemical compounds used in washing dairy utensils.

This method has received the enthusiastic support of the milk inspector.

†Mr. McGuire is Farm Service Advisor for Consumers Power Co. at Owosso, Mich.

Warmth and Dryness Reduce Egg Quality

No storage practice or method can improve a freshly laid egg. The poultryman does have control over the rate of natural deterioration.

When an egg is laid its temperature is about 105 degrees. The sooner it is cooled down to 60 degrees the sooner the loss of carbon dioxide and moisture is slowed down. After one week at 77 degrees, the quality of an egg is appreciably reduced. At 60 degrees an egg will keep for 2 to 3 weeks without an appreciable loss of quality.

When your lights are out, the best and easiest way to determine whether the trouble is in the house or on the power company line is to listen to the meter by putting your ear flush to the meter glass; if there is a hum, the trouble is in your house, if there is no noise in the meter, the trouble is on the line coming in to the house!

A 100,000 kilowatt turbine generator unit, now being built, will be about 72 feet long and weigh 900,000 lbs. Engineers estimate that the unit will nearly consume its own weight in steam every hour in rotating the 70 ton rotor 3600 revolutions per minute. The tip speed of the last row of turbine blades will be 942 miles per hour—well above the speed of sound.

One kilowatt hour of electricity will wash at least 1,000 bottles in the milk house.

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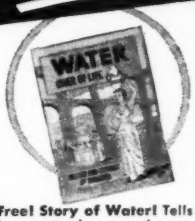

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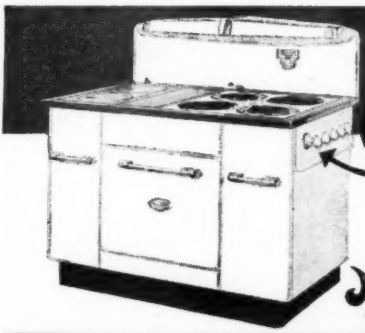

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Barn Cleaner Operates In Uneven Gutter

Breaking Out Old Concrete Gutters Was Unnecessary in this Barn

When Lorn Collins, dairy farmer in Sanilac county Michigan, decided to buy an endless chain type gutter cleaner he faced the problem of breaking up 14 inches of stone encrusted concrete to straighten the edges and smooth the bottom of the gutter.

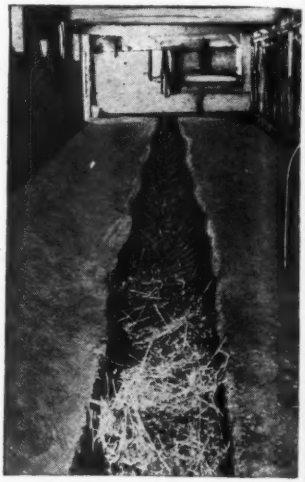
After breaking through the end gutters Mr. Collins decided the job was too tough so he thought he would try it in the old gutter. He set the corners and adjusted the sprockets. He cut his paddles so they would pass the narrowest part of the gutter then he just dumped the cleaner in and tried it.

Somewhat to his surprise Mr. Collins found the cleaner doing a good job. The steel plate in the bottom of the gutter, designed to carry the chain, followed the vertical waves in the bottom of the gutter and the accumulated manure and straw took care of the "bay windows" in the side walls of the gutter.

The only concession Mr. Collins makes to the crooked gutter is to fill it half full of straw immediately after each cleaning. This, he says, should be done anyway because the chopped straw absorbs a lot of the liquid and makes the job easier.

Another innovation Mr. Collins has introduced to his area where there is plenty of mud in the spring and some times in the winter is the long high elevator on his cleaner. He got the longest one he could buy and extended it out beyond the paved portion of his barn yard and up in the air as high as he could get it. Now, when the fields are too soft for a tractor he has plenty of room for a pile. He also has plenty of room to use his tractor powered loader to remove it. Still another advantage of the big elevator is that in the summer when his tractors are busy in the fields Mr. Collins can continue to clean the barn at regular intervals.

Cost of the endless chain type cleaner in the neighborhood



To Lorn Collins' surprise a barn cleaner worked in this very irregular gutter in his barn from the start. A steel plate in the bottom of the gutter, designed to carry the chain follows the vertical waves in the bottom of the gutter. The accumulated manure and straw takes care of the "bay windows" in the side walls.

This long and high elevator on Lorn Collins' cleaner allows him to pile his manure when the fields are wet, or when the tractor is busy and cannot be spared to carry the manure to the fields.

have run to about $35.00 per cow. Operating cost, runs about six cents per cow per YEAR.

Figuring on a 10% depreciation factor, 6% interest on his investment of $1,500.00, and a generous five dollars per year for power Mr. Collins estimates his total overall cost for the cleaner including replacement is $250.00 per year or, roughly, seventy cents per day. That, Mr. Collins figures, is pretty cheap for the toughest job on any dairy farm.

The Cover

Gerald Memmer and son of RFD, Grass Lake, Michigan, prepare for an early garden. Mr. Memmer uses electricity in his hotbed to start tomato, cabbage, and pepper plants and Mrs. Memmer uses it for starting flowers for their yard. The cost of operation is 10c per day and allows them to grow transplants for their own use for much less than they could buy them and at the same time they are able to select the varieties they want without shopping around at a busy season.

A Simple Milk Can Hoist

This milk can hoist is in the milkhouse of the Gourley Farm at Sugar Grove, Pa. It has a particularly good track arrangement. It was designed by B. L. Coleman, an equipment dealer of Russell, Pa. The track allows free movement of the hoist in any direction. Cans are carried by track to an inclined roller conveyor. The conveyor takes them to the loading area, eliminating any hard lifting. Demonstrating this labor saving arrangement is Robert Lord on the Gourley Farm.

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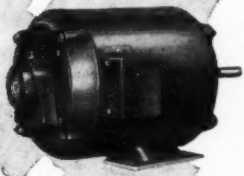
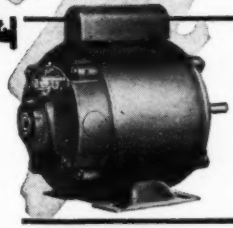
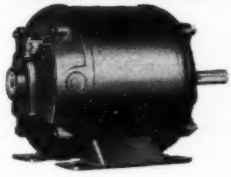


Type RS—Repulsion start, induction, brush lifting single phase motor—where you want high starting torque and low starting current. 1/2 to 20 horsepower.



Type CSH—Capacitor start, induction, single phase motor—provides high starting torque with normal starting current. 1/8 to 20 horsepower.



Type SP—Split phase, induction, single phase motor. 1/8, 1/6, 1/4 and 1/3 horsepower.

Century motor powered equipment can take the drudgery out of many farm jobs. You can save time and energy—and usually get the job done better.

Use Century motor powered equipment to keep water on tap in the house, barn, and feed lot—to pump milk, shell grain, grind feed, sharpen tools, operate hay and grain dryers, and to take the hard work out of dozens of other farm jobs.

On new equipment—or for replacement—be sure you get Century motors. They are available in single phase, three phase, and direct current—1/8 to 400 horsepower.

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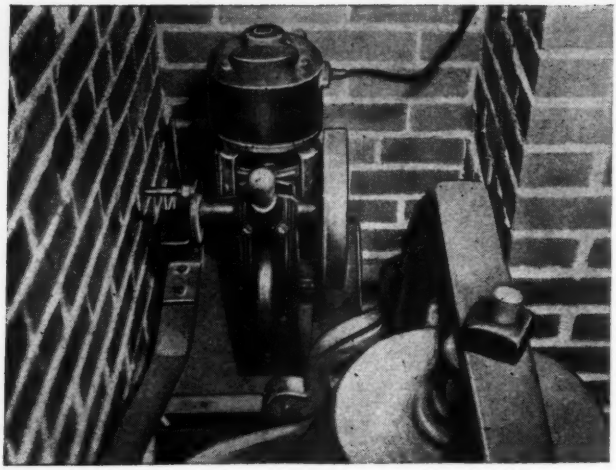
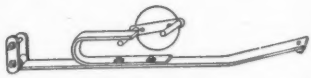


Left: A 1/6 hp motor operates in reverse the gears of an old cream separator. A 6-inch bar was mounted on the old crank shaft onto which 3-inch fingers (made from old roller bearings) were bolted to serve as cams. One cam lifts the bell ringing bar. The other catches it after the bell is rung to prevent vibration.



The hammer bar is secured to a shackle at the left end. This shackle is fastened to the base of the separator. On the striking end of the arm at the right a piece of heavy metal is attached. The bar is raised and allowed to drop by the fingers in the center.

Church Bell Rings Electrically

Members of the Wheatland Lutheran Church in Botetourt County, Virginia, had difficulty, due to structural design, of ringing the church bell; in order to ring the bell it was necessary to drop a rope from the bell down over the outside front of the church. Rain or shine—cold or warm, it was necessary to ring the bell from the steps out in front of the church.

Mr. Harry M. Williamson, a prominent dairy farmer and member of the rural church, decided something had to be done to correct this condition. Mr. Williamson, having learned from experience of the many things electricity could do for him on the farm, started out with firm mind to do this job with electricity too.

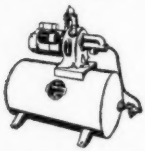
Mr. Williamson found an old model abandoned cream separator which still had all the reduction gears in it. He mounted a 1/6 H.P. motor on top of the frame of the separator, connecting motor shaft directly to disc shaft of separator. This would reverse action of the separator gears, materially reducing the R.P.M. of the shaft where the old hand crank was mounted. A 6″ bar was mounted on the old crank shaft, onto which 3″ fingers (made from old roller bearings) were bolted to serve as a cam for lifting the bell-ringing hammer bar. Hammer bar was fastened at base of separator by use of a hanger similar to an old spring shackle to give it full movement. An arm approximately 6″ long and 6″ high was bolted on hammer arm for the cam on the separator to lift the hammer arm to its highest point, then allowing it to drop from the finger, hitting the bell. Immediately the other finger catches under the arm to lift the hammer bar and to prevent vibration of hammer on bell. A piece of heavy metal was bolted on the hammer bar where contact is made with bell.

. . . . . (Continued on page 30)

complete water service with Rapidayton

RAPIDAYTON Water Softeners save soap, save plumbing repairs, prolong life of laundered garments and make all washing easier.

PLENTY of *soft* water can be yours with a RAPIDAYTON pump *and* Water Softener. The two give you a life-long system which brings you the joys and conveniences of soft water under pressure, no matter where you live. Use coupon for complete details.



RAPIDAYTON Jet Pumps, in capacities from 200 to 2000 gallons per hour, "Make the water do the running."

THE DAYTON PUMP & MFG. CO.,
Dayton 1, Ohio.

Please send me complete information on RAPIDAYTON Water Systems and Water Softeners. This places me under no obligation.

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Street or RFD.....

City..... State.....

EVERSTOPTOTHINK?—a PARATROOPER is the only man who GETS UP IN THE WORLD by FALLING DOWN ON THE JOB . . . . Why the ad-writer lost his job: "WANTED: Man to undertake the manufacture and sale of a new patent medicine. The originator GUARANTEES the venture to be profitable to the UNDERTAKER." . . . . OVERHEARD: "And at the end of the evening she was SO tired she could HARDLY keep her MOUTH open." . . . . SODDEN THOUGHT: Perhaps the reason you DON'T hear the gun at the start of a swimming race is that they USUALLY use a WATER PISTOL. (Caw! Caw!) . . . . From Bennett Cerf the story of Mrs. Beamish who asked her husband, "Dear, LAST year we gave Mother a chair for her BIRTHDAY, WHAT shall we do for her THIS year?" "ELECTRIFY IT!" snapped Mr. Beamish . . . . LOTS and LOTS of folks who BUY on TIME don't PAY that way . . . . JINGLEJOLLY-OF-THE-MONTH: "My bonnie lies under the auto, My bonnie lies under the car; Please hurry and send a repair man—It's lonesome up here where I are." (The Pointer) . . . . Cedric Adams sez, "GOOD TIMES are when you accummulate the debts you're UNABLE to pay in BAD TIMES." . . . . With MARCH 15th approaching by leaps and bounds NOW you know JUST HOW the turkey felt LAST NOVEMBER . . . . SELECTIVE SERVICE: WEED the PEOPLE . . . . WITHOUT mirrors there would be darn few cases of LOVE at FIRST sight . . . . From SEA HAWK via QUOTE comes the SNICKERSCOOP-OF-THE-MONTH: During a Shriners' convention one of the downtown streets was roped off for their parade. Only official cars with large signs were allowed thru the lines. All other traffic was halted or rerouted. But ONE ingenious gent got by the police lines and drove through. HIS placard read: "PAST PARTICIPLE!" . . . . Among other things that DON'T TURN OUT quite as you expect them are people who drive automobiles . . . . UMBRELLA: a SHELTER for ONE—a SHOWER BATH for TWO . . . . RAISE: an INCREASE in PAY you get JUST BEFORE going a little more into DEBT . . . .

Your pun-peddler—DUFFY.

Good Lighting Indoors and Out

Practical ways to achieve good lighting, indoors and out, are shown in a new Government bulletin designed for farm use.

Lighting specialists in the U. S. Department of Agriculture and several public utility and electric equipment manufacturers cooperated in producing ELECTRIC LIGHT FOR THE FARMSTEAD.

Illustrations and guide tables show suitable fixtures and ways to provide lighting for special needs in various rooms of the house, as well as in barns and other farm buildings. A final chapter on lamps not strictly for lighting deals with bactericidal lamps, sun lamps, heat lamps, and lamps to attract insects.

Electric Light for the Farmstead, FB-1838, may be obtained free from the Office of Information, USDA, Washington 25, D.C.

Without salt in their diet, human beings would quickly die. Salt governs the exchange of water in the body's tissues. An adult requires ⅝ of an ounce daily.

Fix 'em up, make 'em last, keep 'em rolling...with
HOME-UTILITY Electric Tools!
Black&DeckerHome-Utility Tools are the finest helpers you can hire to stop trouble before it starts—keep present farm machines rolling— beat new equipment shortages! These versatile, labor-saving tools will help you make repairs and adjustments, clean equipment for longer life and smoother running, install labor-saving attachments. And they're great for work around the house, too!
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½" Drill
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Quality-built by world-famous Black & Decker, they have extra-powerful motors, husky housings, tough parts for a long, useful life. And their compact, balanced design means easier handling, less fatigue! Try them today at your hardware or implement dealer.
HOME-UTILITY TOOLS speed up jobs like these
• REPAIRING machinery, tools and harness.
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• DRILLING holes for mounts and supports.
• REMOVING rust, dirt, old paint and weld spatter.
• SHARPENING hand tools, mower blades, sickle bars, scythes, corn knives, hatchets and kitchen knives.
World's largest maker of QUALITY-BUILT by BLACK & DECKER portable electric tools
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TOOLS
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SAWS • SANDER-POLISHERS • DRILLS

Electrical Housekeeping

Edited by NAN SHAW, 329 Memorial Union, Ames, Iowa

Equipment News For '52

Again it's time to report on the annual Home Furnishings Market in Chicago. I was interested to see what will really be available to you this year. Our second year of defense production has put us past the midway point on government orders. We go into 1952 with additional cutbacks in use of the critical materials—steel, aluminum, and copper—all essential metals for electric equipment.

Laundering is a simple task with an automatic washer and dryer.

Considerable production for government is still ahead.

Does this make a dreary outlook for anyone who needs a piece of equipment this year? Not at all! Last year's high production did not find as many buyers as was anticipated, so appliances have been getting stockpiled in warehouses. Too, our government has restricted home building permits to about 700,000. This reduces the number of new appliances required to equip new homes. Combine these facts with production lines still operating—though with fewer materials—and you'll continue to see good needed appliances in your dealers' stores—appliances that can help you simplify your homemaking jobs and save you time and energy.

Don't expect to find newly created styles and changed models—that cannot happen due to lack of materials and men for new tools and dies. The styling and quality changes made by manufacturers a year ago are still fresh and modern. Restricted materials will be spread out to make more of the medium and low priced items and fewer of the deluxe high priced ones.

Prices can hardly be expected to show a decline over what they were in late '51, but neither should they spiral upward. Should labor and transportation charges go even a little higher it would influence retail prices on equipment lines.

Ranges

You'll find minor refinements being placed on ranges as more alternates are used—for example, narrower strips, if any, of metal trims, wider strips of light to illuminate range tops, shorter splashbacks, more one-oven than two-oven ranges—more apartment ranges with four rather than three surface units. A few more manufacturers will be offering full capacity ranges shorter than 40 inches. One manufacturer is putting a raise-up cooking unit to left front rather than back of the range.

There seem to be more solid rather than the look-in kind of oven door. Some midwest manufacturers have joined those on the east and West coast to provide separated range units. This is a real help, particularly to handicapped homemakers who need to have tailor-made kitchens. Being able to install an oven at the best reach-in height and locating the cooking units at easy-to-use heights can save many frustrations. More models will have an instant-heat unit for that extra punch of heat.

Refrigerators

The biggest news in refrigerators is that most manufacturers will be offering models with automatic defrosters and two-temperature storage zones—one small section for frozen foods, the major section for perishable foods. There will be more models with narrow storage shelves and special compartments on doors. There will also be a wider use of the plastics. Some refrigerators will continue

This is one of the 1952 model ranges. It features an instant heat unit, a full length light on the splashback, and concealed heating units in the oven.

Here is a clean-up center all wrapped up into one unit. It includes a sink with a garbage disposal unit and a dishwasher.

to have colored linings—others colored gaskets.

Freezers

Without taking up any more floor space, some freezers are offering more interior storage space. Hinged covers are being divided into two for easier management by all family members. There seem to be more freezers that have a divided compartment for freezing before storing fresh packaged foods. Many interiors have changed complexions—depending upon the alternate material used by the manufacturer. These interiors vary from the usual white to dark navy, to dull metallic, to pastel green. Then, too, there are more of the large sized freezers to meet the preferences for those of you who want complete freezer service right on the place.

Water Heaters

Water heaters have probably suffered the most from metal restrictions, especially copper, but here too supplies are coming through. There are square counter-height models of 30- to 40-gallon capacity, but most of the large size models are round. An outstanding convenience added by one manufacturer has been an easy-to-operate temperature selector dial. This makes it possible for the homemaker to increase the temperature of stored water ahead of the time she expects to need it for automatic equipment demands.

Dishwashers

Dishwashers are really in demand in all kinds of homes. To meet this demand for dishwashers for small families and for renting families so they can get away from the plumbing worries, there are several roll-about portable dishwashers with automatic features. They will handle dish service for a family of five. In the plumbed-in dishwashers there are more front-opening models to select from, whether you want one to slide under a counter top or one built in as part of the sink.

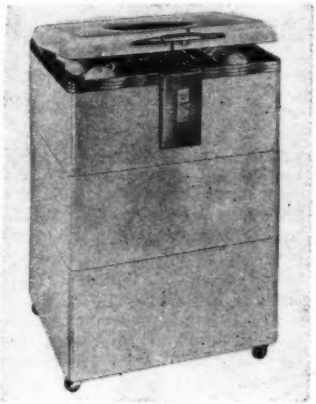
Garbage Disposal

A food disposal unit is sometimes called the automatic garbage man. It will be considered for more of the new and remodeled farm home plans in '52. That's because it is another one of those Number One time and labor savers on the farm. It is a health protector, too, since it reduces opportunities for flies and mosquitoes to find open country breeding places.

Automatic Washers

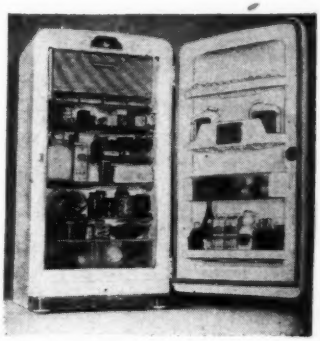
With regular and seasonal help less available and more farms getting pressurized water systems, many of you will be wanting to simplify the weekly wash routine. Automatic washers will continue to be available as labor savers. Late in '52 there might be some short waiting periods for deliveries in certain parts of the country.

Because of users' reactions and demands, more manufacturers are building in water saving features. With some it occurs with the soaking, with some, the suds, with others, the rinse water. Still other washers are to be found with variable load washing action where you can wash a 2- to 3-pound load of baby clothes, a 4- to 5-pound load of personal linens, or full capacity 9-pound load of bedding. It's also possible to find more washers that permit you to intercept the washing cycle to add forgotten items or to skip several phases of the washing cycle.



Portable dishwashers such as this one can be used where wall space is not available adjacent to the sink.

A complete kitchen in one unit! It contains the sink, refrigerator, surface cooking units and a storage drawer at the bottom. Ideal for small kitchens.



Most refrigerator manufacturers are offering models with automatic defrosting and two temperature zones—one for frozen foods and one for perishable foods. Easy sliding shelves are also featured by at least one manufacturer. More models include door shelves too.

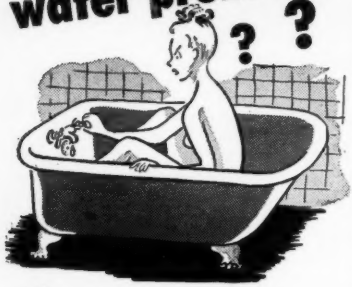
Clothes Dryers

Clothes dryers will continue to be one of the pieces of automatic home equipment much in demand and there will be even more manufacturers and dealers offering them than last year. For this reason, even though all production is curtailed, there should be dryers for purchase and delivery wherever you are when you need one.

Ironers

Ironers make you sit down to iron and shorten the ironing hours. So it is another one of

water problems ? ?



a BERKELEY pressure system solves 'em in a jiffy!

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Model 056-40 Berkeley Deep Well Jet Water System pumps 600 G.P.H. at a 40 ft. pumping level with a pressure range of 20 to 40 lbs.

There's a Berkeley Jet Type Water System for your particular need.

Write for BULLETIN 505

BERKELEY PUMP COMPANY

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RUST DOESN'T COME OUT OF YOUR CLOTHES

LET US TAKE IT OUT OF THE WATER!

A DIAMOND Iron Removal Filter removes rust and other matter **before** it reaches your clothes. Cost is low. Send for free booklet

Oshkosh Filter & Softener Co.
Oshkosh, Wisconsin

the labor savers to simplify work around the home. There will be the same variety to shop around for, such as flat plate and rotary with one or two open ends.

Other Equipment

With the extended rainy season of last year, considerable interest has been aroused in dehumidifiers. They remove 1 to 3 gallons of water (in 24 hours) out of the air in a confined space. These appliances can be plugged into regular convenience outlets.

Vacuum cleaners will be produced in the same variety and finishes as '51. One manufacturer has a new vacuum cleaner of the cylinder type. The dust container is ejected for easy removal by the user.

A number of lightweight floor polishers for use on hard floor finishes, counter tops, and woodwork are to be on the market.

Last year I reported a combination range and refrigerator. This year I'd like to call your attention to a 3-in-1 unit which takes up less than 30 inches of floor space and provides a sink, surface cooking units, and a 4-cubic foot refrigerator.

Kitchen cabinets are being shown with a variety of finishes and interior fittings for greater convenience. More manufacturers are offering revolving shelves in corner units and double basin sinks.

Longer Life for Blankets

By **Elaine Knowles Weaver**†

Laundering blankets has long been a major problem to a large number of homemakers. Excessive shrinkage and felting have ruined many a lovely blanket. Rough, harsh blankets never seem as warm as soft, fluffy ones. Many a length of material has been sewn to blankets to allow a tuck-in at the foot—all because of excessive shrinkage.

Blankets can be washed with little or no shrinkage. Here's how to launder blankets safely in either automatic or non-automatic washer.

1. Fill the machine with water which is comfortably warm to the hands.

2. Add detergent. For sudsing variety, use enough to get a 2-inch suds. With the low-sudsing type, use about ¾ cup for each 10 gallons of water.

3. Operate the washer until the detergent is dissolved.

4. Examine blanket for extra soiled spots or streaked bindings. If they exist, scrub them with a vegetable brush and detergent water.

5. Place blanket in washer and allow it to soak for 15 to 20 minutes. Turn it over once or twice by hand.

6. Extract water by spinning or by wringer.

7. If automatic washer operates during fill period, remove the blanket.

8. Refill washer with water of the same temperature used in washing. Soak blanket for 5 minutes, turning it over in the water once or twice by hand.

9. Extract the water and repeat the rinsing in lukewarm water.

10. Stretch the blanket vigorously. This is simpler if it can be done by two persons. If you do it alone, place the blanket over a line, draw hems together and pull evenly up and down the hems.

†Miss Elaine Knowles Weaver is Associate Professor of Home Economics, Ohio State University, Columbus.

11. Dry over two parallel lines or turn during the process if it is across only one line. Or dry in a dryer.

12. When blanket is dry lay on a flat surface and brush vigorously with a pet brush (steel

bristles set in rubber) or a nylon hair brush.

13. Steam press, or sponge and press the bindings.

The most tiring part of the washing job is the carrying of heavy baskets to and from clotheslines. I am completely sold on the automatic dryer as being one of the biggest labor saving devices in the home.

Drying blankets can be successfully done in an automatic dryer if care is taken. For best results, use this method:

1. Preheat dryer on high heat.
2. Add 4 to 5 pounds of dry towels and other small items and preheat them.
3. When blanket is placed in the dryer, mix these preheated items in and around the blanket. They serve as buffers to reduce mechanical agitation.
4. Dry blanket until about ¾ of the moisture has been removed. An average weight 3-pound blanket will take about 15 to 18 minutes.
5. Remove from the dryer. Stretch and brush.

Make Slipcovers Fit

You'll insure a perfect fit for slipcovers after every washing if you iron just the bottom ruffles or pleats and then gently work the slipcovers onto chairs or divan while the covers are still slightly damp. The covers can be ironed right on the chair or divan.

Don't Bone-Dry Clothes

When using an electric clothes dryer, it's better to underestimate drying time than to overestimate it, in order to avoid getting clothes bone-dry. Overdrying will make fabrics harsh and stiff, selvage edges will curl and fabrics like terry cloth will not be as absorbent as they should be.

Dry Mixed Loads

Lightweight linens and cottons can be dried in the same dryer load with heavier fabrics. Just set the time dial for the shorter drying period needed by thin fabrics and after removing the lightweight materials re-set the dial and finish drying the heavier fabrics.

While there is now plenty of pepper for all, it has been estimated that if every family in America used just 2 shakers of pepper a year, the world's supply would be exhausted.

You can do it better on a SINGER!

Without attachments: darn, monogram, embroider, cable stitch, bouclé stitch, spark stitch—do them quickly, beautifully.

With attachments: buttonholes, invisible hems, setting in zippers, ruffling, binding, quilting—do them in the easiest, most satisfactory way ever invented. Basic attachments come *with* machine.

You learn ALL these clever stitches in the lessons you get at no extra cost with every new SINGER* Sewing Machine.

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Prices from $89.50 Budget terms. Liberal trade-in allowances.

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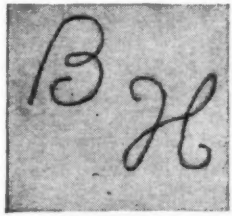
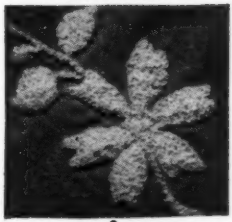
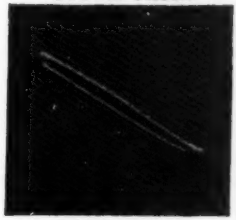


MONOGRAM

EMBROIDERY



BOUCLÉ STITCH



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It takes years of experience and thousands of pump installations to design a pumping unit with the "built-in quality" offered by Johnston. That's why it will pay you to go to your local Dealer at the sign of the Johnston "J" for complete pump service or for a survey of your water requirements. You can count on courteous treatment and the "know-how" of factory-trained engineers.

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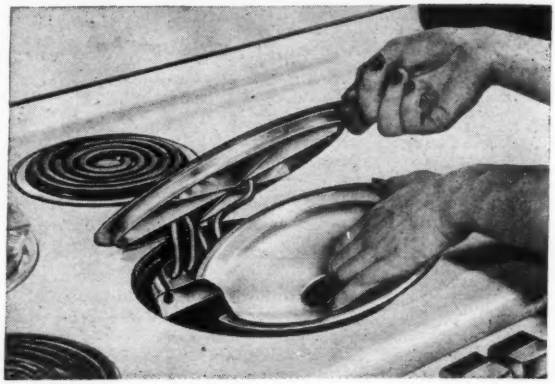
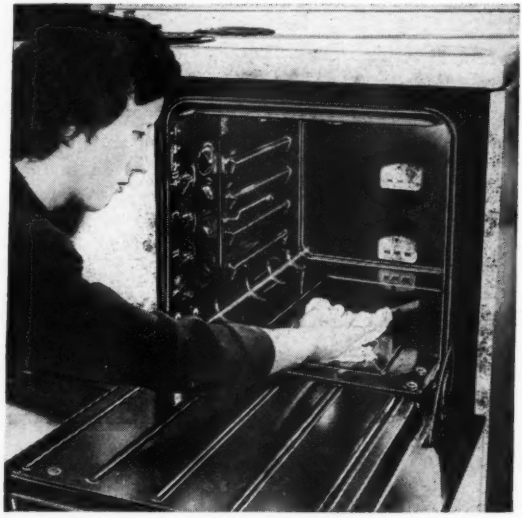
Electric Range Easy to Clean



Reflector pans under surface units should be kept clean and bright because the heat that they reflect upward from under the units has much to do with the speed of cooking. On many ranges they can be removed for washing in your dish pan. If necessary, use a fine scouring pad and mild cleanser on stubborn stains or grease.



Clean your oven to prevent spills and grease from baking into the enamel. First let oven cool: then remove the heating units and shelves and wash in warm soapy water. Remove stubborn spots with fine steel wool and mild cleanser when cleaning oven. Be careful not to bend, move or damage oven thermostat.

No Double Boiler

You don't need a double boiler if you have an electric range with a low heat. Sauces, puddings, custards and candy can be trusted to the low controlled heat in the ordinary saucepan without fear of scorching, curdling or lumping. You can melt chocolate without fear of burning in a saucepan directly over a surface unit on low heat.

Never fill a pressure cooker more than ⅔ full. For soups and other liquid foods, fill the cooker only ½ full.

Place and Space for Dishwasher

What is the most convenient place for an electric dishwasher?

So many queries came to the Washington State Experiment Station about this popular appliance and about the counter space needed for efficient use that a study was made to find the answers. Both top- and front-opening types were tested in washing dishes for a typical dinner for a family of six. Records were kept of time and motions used in loading and unloading.

The left of the sink proved a better location than the right of the sink for saving steps and arm work—at least for right-handed workers, as most women are. Saving arm effort is important in loading and unloading. (The records showed 194 arm motions used compared with 60 body motions—that is, bending, stretching and turning). However, time spent was about the same for a dishwasher on the right as on the left of the sink.

As for the two types of dishwashers, time and steps used were about the same with each, but top-openings required more bending and front openings more arm use.

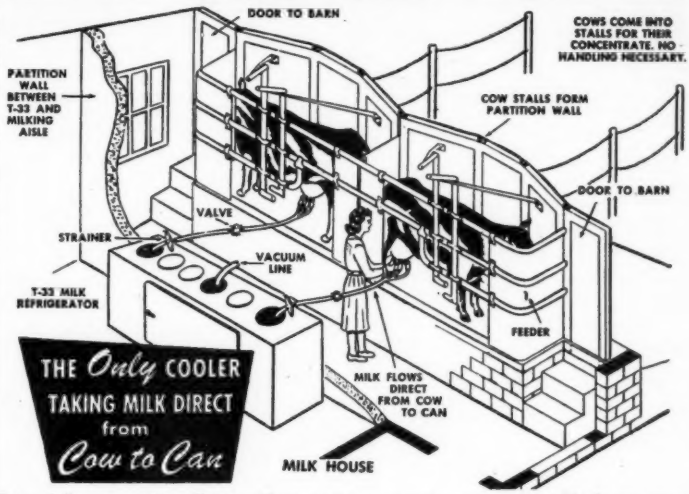
The counter space recommended for convenient stacking of dishes for mechanical washing is 24 inches deep and from 36 to 40 inches long.

The front-opening dishwasher seems to have some advantages in saving space. The top may be used for stacking dishes, provided the worker doesn't have to reach too far when the dishwasher is open for loading. Dishwashers that fit under counters also offer counter space above for stacking. Then, too, with front-openings, wall cupboards can be built close above the dishwasher, but with a top-opening washer there must be space above for lifting the lid.

To Prevent Bulging

When ironing round centerpieces or tablecloths, always start from the center to prevent bulging. Continue ironing from top to bottom and then from side to side, depending on size.

LOW COST SYSTEM MAKES MILKING EASY


DOOR TO BARN
COWS COME INTO STALLS FOR THEIR CONCENTRATE. NO HANDLING NECESSARY.
PARTITION WALL BETWEEN T-33 AND MILKING AISLE
COW STALLS FORM PARTITION WALL
DOOR TO BARN
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THE Only COOLER TAKING MILK DIRECT from Cow to Can
MILK FLOWS DIRECT FROM COW TO CAN
MILK HOUSE

Enjoy fully automatic milking, without stooping, carrying or pouring. No heavy cans to lift. Connect milking machine to your T-33 Milk Refrigerator and you have the T-20 System of Milking. Milk flows direct from cow to can—Not exposed to outside air—starts cooling instantly. When first can is full, milk automatically by-passes to next can. Keeps milk grade high, bacteria count low. Pays for itself in 6 to 12 months. Write for free literature and installation plans.

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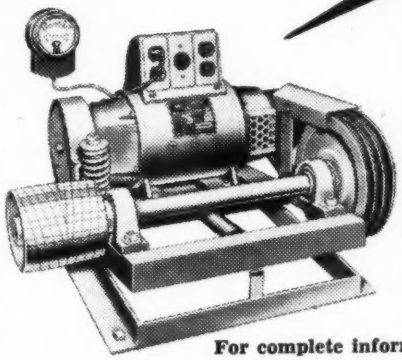

Electricity on your farm saves you many hours of labor, helps boost your production, lowers your operating costs. Electricity makes your home more comfortable, more convenient—a better place to live. Be sure you always have electricity even if your highline fails. Be sure by investing in a Wincharger Power Insurance Generator . . . the best power assurance policy.

Shown here is Model 5000-A. A tractor driven, 3000 watt, 115/230 volt, 3 wire service AC Generator. Motor starting capacity, 5000 watts, 2500 watts continuous capacity. Exclusive rocker base holds belt tight. This is one of three tractor driven Wincharger AC Generators.

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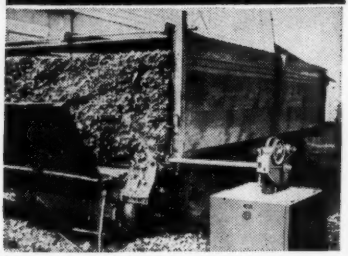
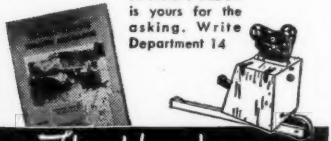
Flinchbaugh
WAGON UNLOADER



Tested—Even though the Flinchbaugh is a pioneer and leader in the field it's constantly tested on all types of farms—all types of loads. It *must* stand up to its reputation—an inexpensive, heavy-duty unloader for both light and continuous heavy work!

Proven—Trouble-free inexpensive operation year after year has meant thousand upon thousand of satisfied customers all over the United States. Ask your farm equipment dealer for a Flinchbaugh—and buy the unloader with the famous canvas-saving, Non-spring Roller and Quick-aligning Portable Power Unit.

A FREE FOLDER
is yours for the asking. Write Department 14



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1951 National Grand Champion Red Poll cow

Starting with first calf, she made three consecutive Advanced Registry records to 8,297.7 lbs. of milk and 342.5 lbs. of butterfat, averaging over 300 lbs. of butterfat. All mature AR Red Poll cows reported, averaged 366 lbs. of butterfat for five years. Dual purpose breed for profitable milk and beef production. World's only all red, hornless breed of dual purpose cattle. *Booklet And Breeders Directory Free.* Magazine, Red Poll NEWS, $1 per year.

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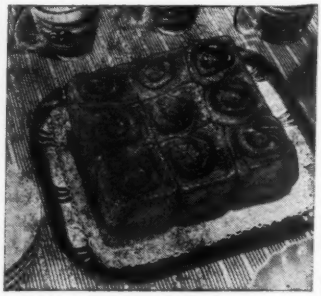
HAGAN BLDG., PITTSBURGH 30, PA.

Cinnamon Rolls

The children will play close to the house when you've promised them cinnamon rolls hot from the oven. They'll be poking their noses into the kitchen to ask, "Are they done yet?"

Cinnamon rolls are a delicious way to give children extra calories for energy and extra vitamin B-1, or thiamine, for steady nerves. Surveys show children's diets are often short on both calories and thiamine.



Cinnamon Rolls

2 packages yeast, compressed or dry granular	3 eggs, beaten
¼ cup lukewarm water	5 cups sifted flour (about)
1 cup milk	¼ cup melted butter
¼ cup sugar	Cinnamon sugar
1½ teaspoons salt	½ cup raisins (if desired)
½ cup shortening	2 tablespoons milk

Soften yeast in lukewarm water. Scald milk. Add sugar, salt and shortening. Cool to lukewarm. Add 2 cups flour. Beat well. Add softened yeast and eggs. Mix well. Add remaining flour to make a soft dough. Turn out on lightly floured board and knead until satiny. Place in greased bowl, cover and let rise until doubled (about 1½ hours). Punch down. Cover and let rest 10 minutes. Roll out to rectangular sheet ¼ inch thick. Brush with melted butter and sprinkle with cinnamon sugar (1 cup sugar mixed with 1 tablespoon cinnamon). If desired, raisins may be added. Roll up like jelly roll and seal edge. Cut in 1-inch slices and place cut side down in greased muffin pans, ring mold or deep cake pan. Brush tops with milk and sprinkle with cinnamon sugar mixture. Let rise until doubled (about 45 minutes). Bake in moderate oven (375°) 25 minutes. Make 2½ dozen rolls.

These rolls are one of the many good breads that can be made from a basic sweet yeast dough.

Marmalade Lattice Coffee Cake

Marmalade Lattice Coffee Cake is just a fluffy scone dough and a cup of jam, plus a little of your imagination.

This scone dough, like its plainer biscuit relative, is as versatile as you care to make it. It is simply a biscuit recipe to which a bit of sugar and an egg have been added. This bit of added richness makes

Spring Sewing

4674—This dress opens flat—that means easier ironing. Your little girl can dress herself too—better make several. Comes in sizes 2-10. Size 6 frock, 3 yards 35-inch; panties ⅞ yard.

9363—A brunch coat—an easy-to-iron house dress. Easy to make, too. Comes in sizes 12-20; 40. Size 16 takes 4⅝ yards 35-inch material. Send THIRTY CENTS (in coins) for each pattern to ELECTRICITY ON THE FARM, 196, Pattern Department, 243 West 17th Street, New York 11.

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Crimps Grain For Better Feeding

James Hatcher, Bonner Springs, Kansas, feeds about 300 head of cattle and 125 hogs every year. He finds that crimped grain is more easily digested . . . helps add weight faster. He uses this modern, low-power-consuming Davis-Built Krimper-Kracker driven by a 2 H.P. motor. Complete range of sizes available; capacities up to 14,000 lbs. hourly.

Attention Farm Equipment Dealers: Choice franchises available. Make steady profits with proven "Davis-Built" line. Write at once.

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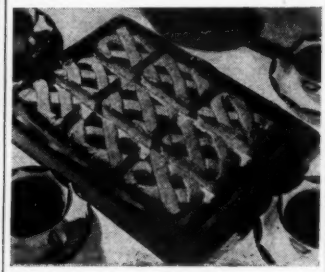
Dept. EB-3 Bonner Springs, Kans.

a good partner for fruity flavors in shortcakes and coffee cakes.

Marmalade spread on a layer of rich biscuit gleams through the crisp lattice topping. This coffee cake answers your need for good substantial food to spark up your



meals without too much time spent in the kitchen.

Marmalade Lattice Coffee Cake

2 cups sifted flour
3 teaspoons baking powder
1 teaspoon salt
⅓ cup shortening
¼ cup sugar
1 egg, beaten
½ cup milk
1 cup orange marmalade or fruit jam

Sift together flour, baking powder and salt. Cream together shortening and sugar until light and fluffy. Add egg. Mix well. Add flour mixture and milk alternately to creamed mixture. Spread 2/3 of dough in lined 7 x 11-inch pan. Spread marmalade or jam on dough. On a floured board, roll remaining dough ⅛ inch thick. Cut in strips ½ inch wide. Place strips on marmalade in lattice fashion, tucking ends of strips down on edge of coffee cake. Bake in moderate oven (375°) 30 minutes. Yield: 1 coffee cake, 7 x 11 inches.

Whip Cream for Short Cake Ahead

Sweeten whipped cream to taste and fill paper baking cups with the amount you would normally place on a serving of dessert. Arrange the cups in refrigerator trays and freeze. Place them in freezer carton or drop in freezer bag and store in freezer. When unexpected guests arrive, you can remove as many of the individual servings as you need without having to stop and whip the cream. This also saves small amounts of cream which are left over. It also helps to store up cream when your home supply is best.

Early attempts at quick freezing foods before 1930 depended on a few types of fish; today, more than 200 varieties of food, including some completely prepared dishes, are quick frozen and marketed.

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for Junior Partners

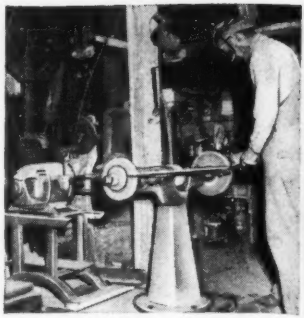
HI—

The train was late. Everyone was anxious. The men sitting in our car, as the train stopped, were fidgety. The porter was cleaning up. It was an unscheduled stop. In fact, it was between two small stations. One of the passengers asked, "Where are we, Porter?" Said the porter, "Just somewhere, no place special."

That's about where we are now. Last year is over. This year is yet to start—in earnest. On a farm, the year doesn't follow the calendar. It's growing season to growing season, regardless of what the calendar on the wall may say.

There is a lull now—but it will soon be over. Before the new season, make sure that all your farm equipment is in proper condition. Now is the time to get it ready. When spring bursts her bonds, be ready to welcome her. This new year is a year of challenge. Be sure you're ready to meet it.

Kenneth V Anderson



A heavy duty grinder is essential equipment for a modern farm shop. Equipment of this type is useful in keeping keen edges on cutting tools.

Farm Shop—A Good Investment

Power Tools Can Simplify Maintenance of Your Equipment and Make It Last Longer

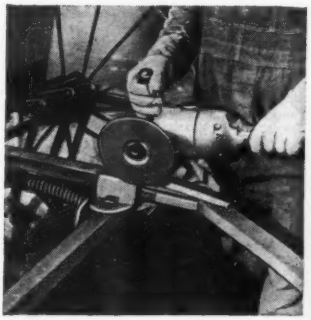
By **HAROLD L. KUGLER**†

The trend in agriculture towards the increased use of machinery in the past twenty years has greatly emphasized the need for the farm shop. A farmer who specializes in livestock production, such as poultry or dairying must have good equipment in order to have efficient operation. Since each of the farm enterprises require special equipment, it is logical that the farm shop becomes an important part of the farm business.

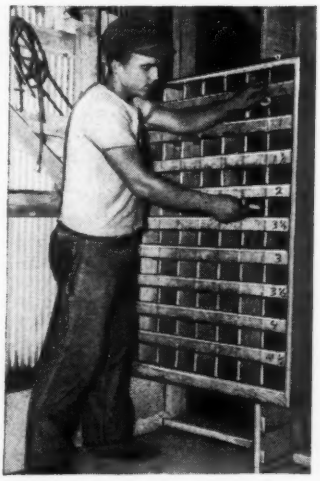
A shop 24 x 26 feet is adequate for most farm repair operations. But, the size of the building should be patterned on the size and type of farming operation, interest and ability of the person who uses the shop, size and amount of equipment repaired, and the tools to be used. It should be located so as to permit expansion. A shop is particularly handy if adjacent to the machinery storage area. This is why many farm shops are found in a corner of the machine shed.

The shop building must have adequate electric wiring. In planning the wiring, you should provide sufficient circuits and enough outlets to accomodate present and future needs.

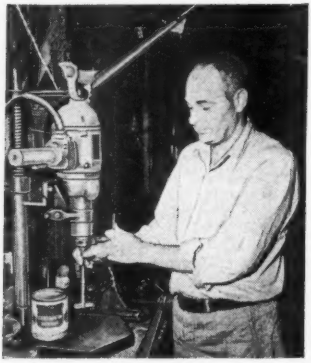
The circuits should be of both



Electrically operated power tools increase speed in making repairs on farm equipment. A right angle sander-buffer equipped with a fast cutting grinding wheel is shown being used to vee out a part on a grain drill in preparation for welding. The part was repaired without removing it from the machine. This type of tool can be used as a sander or buffer in addition to being used as a grinder.

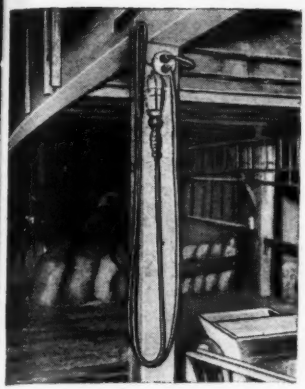


Storage bins for bolts, nails, and farm machine parts improve the efficiency of repair operations in the shop. Well organized storage bins enable the farm operator to find the necessary bolt quickly.

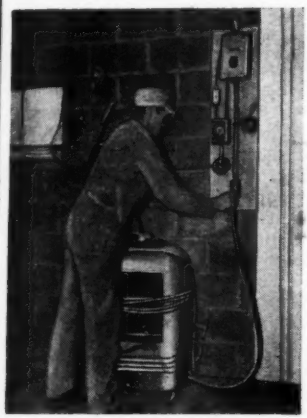


Harry Hoffman of Yardley, Pa., is getting ready to mix some paint with his handy paint stirrer that he made himself. It fits into his combination hand and bench drill.

†Mr. Kugler is Professor, Dept. of Agricultural Engineering, Kansas State College, Manhattan, Kansas.



A trouble lamp is a must in any farm shop. It should have a heavy duty rubber covered cord, a rubber handle, and a protective cover for the lamp.

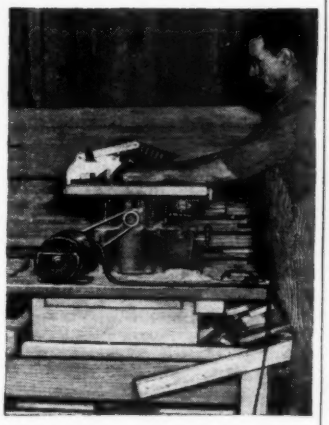


A farm shop needs an adequate supply of electric outlets. A 115 volt convenience outlet and a 230 volt arc welder outlet are more useful when placed near the entrance door to the shop. Repairs and maintenance operations can be carried on outside the building. Incidentally hard surfacing, done with the welder, makes tillage tools last longer.

115 volt and 230 volts capacity. A 230 volt, three-wire circuit is necessary to operate a farm welder. It is recommended that motors larger than ½ horse power be run off of 230 volt circuits.

A convenient arrangement which increases the use of the arc welder on the farm is to place both a 230 volt outlet and a 115 volt outlet on the power pole in the farm yard. This permits the farm operator to weld and repair machinery at night. He can operate an electric drill or an electric light from the 115 outlet at the same time he is welding.

The amount and kind of shop equipment and tools required



If you work a lot with wood a table saw may be your most useful and practical piece of shop equipment.

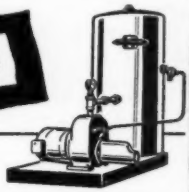
depends entirely on the money you want to spend, your mechanical ability, and the amount and kind of work to be done. A farm management Extension Economist made the statement that a farm with an average investment of $5,000 in machinery

It is not necessary for all shop equipment to have individual motors. This portable motor operates a lathe as well as a wire brush and grinding wheel. On the wall you can see the battery charger that keeps the truck and tractor batteries up to par.

For healthier farm living use plenty of running water

GET A DEPENDABLE

DELCO



You can have all the running water you need by installing a low cost Delco-Jet Pump.

The Delco-Jet Convertible Pump, available in 4 sizes, is easy to install—ready to pump as soon as it is connected.

And even after installation, should the water level in your well fall, the Delco-Jet Convertible can be converted quickly and inexpensively from shallow well to deep well operation.

Find out from your nearest Delco dealer which Delco pump will best meet *your* water requirements. Or write Dept EF.

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It Pays to..
Grind Your own Stock Feed
Cut Feeding Costs 20% to 40% and increase the weight of growing Pigs, Hogs, Cattle, Sheep and Poultry.
Grind shelled or ear corn, wheat, oats, alfalfa, soy beans and roughages for as little as ¾ cent per hundred pounds, with BELL'S "MODERN" HAMMER MILL. Electric or Engine power—2 Sizes;—Write for Special Folder and Prices today—
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CORN SHELLERS HAMMER MILLS FEED MIXERS

MASTITIS IN COW CAUSES STREP THROAT INFECTION

Mr. Clarence Schroeder

"My husband had strep sore throat and couldn't get rid of it. Our veterinarian treated our cow for mastitis and advised my husband to stop drinking her milk. His sore throat left. We bought pasteurized milk until we got our Home-Health Pasteurizer —now we know our milk is safe."
Mrs. Clarence Schroeder, Farhamville, Iowa

HAVE DISEASE-FREE MILK with the HOME HEALTH PASTEURIZER

Easy to use
Just turn it on
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Can't boil milk or cause "cooked taste." Pasteurizes a gallon at a time. No need to check temperatures or watch the clock. No stirring necessary. Laboratory tested and guaranteed. Accepted for advertising by American Medical Ass'n. Ask your dealer or mail coupon.

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• ALL FARM CROPS

PLANNING A MOW HAY DRYER? It will pay you to investigate the American Fan . . . the most complete, most useful crop ventilating fan on the market. Write for details.

American CROP DRYING EQ. CO
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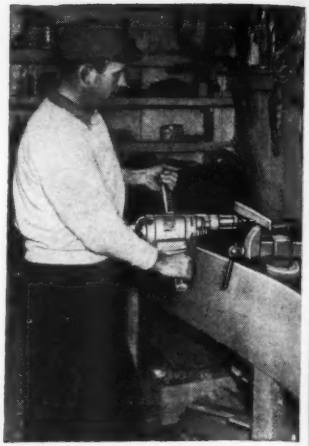
is justified in having as much as $500 to $750 invested in the farm shop, or a ratio of 10 to 1.

What tools are recommended? Answer this question by determining "What is essential?" We can start the list with a number of small hand tools, such as ball-pein hammers, claw hammers, pliers, adjustable jaw wrenches, and saws. All farm shops need a strong, well mounted vise. This can be followed by an anvil and a tool grinder. Tools are practically useless unless they are sharp. A grinder is a very important piece of shop equipment. In fact, there should be two grinders; one on which stones are used to sharpen edge tools and the other for heavy duty grinding such as encountered when shaping iron for welding.

Some of the tools designed for special needs in the farm shop are the arc welder, electric drill, portable hand saw, portable buffer and grinder. A new type of grinding wheel is now available that would be very useful in any farm shop. It is designed for use on portable grinders or buffers. It is six or eight inches in diameter and a quarter inch thick. The wheel appears to be made of a number of layers of canvas-like material which have been impregnated with abrasive. The wheel cuts metal fast. It can be used for cutting angle iron, rivet heads, and preparing metal for welding. A right angle buffer-sander equipped with this type of stone is handy for sharpening mower sections or rolling coulters on plows.

Tractor wheels can be changed in a matter of minutes with this rotary impact tool. It can quickly spin off nuts, studs, or screws, even when frozen or corroded.



When the need arises for the use of one particular piece of shop equipment, very often that piece becomes the most valuable. This is a view of Harvey Worthington's shop at West Chester, Pa. According to him the portable power drill is the most useful tool that he has.

The farm shop is one of the important investments of the farm business.

Church Bell Rings Electrically

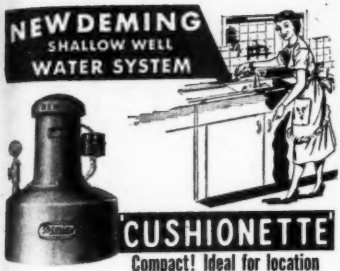
. . . . . (Here from page 18)

Wiring consisted of one wall-type toggle switch and some two wire #14 non-metallic sheathed cable. Switch was mounted on wall in back of church auditorium.

Mr. Williamson said: "The principle is easy; however, several trials and errors took place. If you have some time these winter months, and an old cream separator, you too can build just such a device to ring the bell for your church. It's a lot easier to flip a switch than it is to tug at a rope."

Rail investment for a mile of railroad in the United States is $105,922, including stations and all other equipment.

NEW DEMING
SHALLOW WELL
WATER SYSTEM



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Free! Folder and Guide!

Write for "CUSHIONETTE" folder and guide "How to Select Your Water System." Both FREE!

THE DEMING CO.
504 Broadway
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DEMING
THE COMPLETE LINE
PUMPS AND WATER SYSTEMS

Milk Handling Methods are Changing

. . . . . (Here from page 7)

Millerton, New York, it is just a 15 minute job every other day. That amounts to 7½ minutes a day. A 530 gallon cooling tank is used on this farm. Just think how much time they would have to spend handling the 53 cans they would need for the same capacity.

You may wonder about costs on these coolers. They are considerably more expensive to buy than the conventional can cooler. For this reason, on some of the original routes, the dairy supplied the farmer with the tank on a rental basis. However, it soon became apparent that the tanks could pay off in from 1 to 3 years. After all, if you can increase the fat test, eliminate spillage, stop buying cans or having them retinned, reduce hauling costs, and reduce labor, the savings can be very real. Consequently, the farmers now insist on owning the coolers themselves.

How soon can you expect to use these methods? You can start with a pipe line milker anytime. The cold wall tank's use is dependent on developing farm pick-up routes of sufficient size to supply the tank truck's capacity. It is not a one farmer plan, unless he has a very large herd. However, with its many benefits for the farmer, dairy industry, and consumer, its widespread use is inevitable. By reducing costs it will help to keep fluid milk competitive with other foods and beverages.

IF ELECTRIC SHAVERS
CAN'T TOUCH YOUR BEARD
YOU NEED A

THE SHAVER
THAT SHAVES
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Whisker's clipper-type .002" thin blade shaves any length beard, even to 7 days' growth, without pulling or stalling. 110v AC model; no TV or radio interference! See your barber or dealer. If he cannot supply you, send $15.95—we pay postage; or send $2, you pay balance plus postage and C.O.D. 10-day money-back guarantee.

CADET ELECTRIC HAIR CLIPPER
Cuts hair, removes superfluous hair from legs and under arms. The same fine quality clipper used and sold in many beauty shops. See your shop, or dealer. If you prefer, send $10.95—we pay postage; or $2, you pay postman balance, postage and C.O.D.

Electro Tool Corp., Dept. W462-C, Racine, Wis.

Whats and Whys of Infrared Brooding

. . . . . (Here from page 11)

and keep them in the warmest floor area.

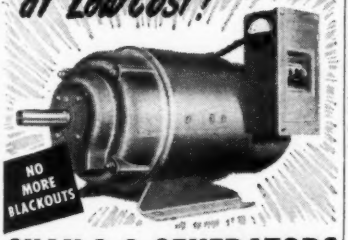
Can infrared lamps be used for brooding in extremely cold climates?

Yes. Infrared lamps are now being used in practically every section of the country for brooding chicks.

How does the cost of infrared units compare with other types?

Because of their simplicity, infrared brooding units cost very

EMERGENCY
ELECTRICITY
at Low Cost!



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for Tractor Drive

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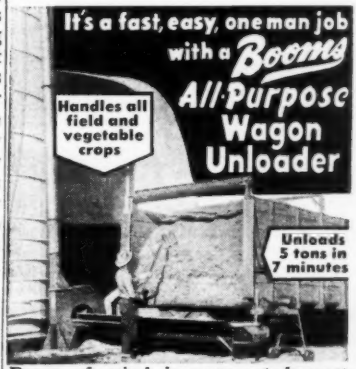
It's a fast, easy, one man job with a Booms All-Purpose Wagon Unloader



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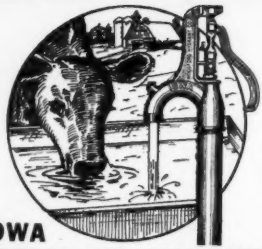

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Order yours now and give your stock running water ALL winter. Avoid costly, time-wasting freeze-ups.

★ Toggle action prevents dribbling.
★ Hydrant drains below frostline.
★ No springs or screw threads to wear out. Save on upkeep.

Install on ANY farm water system. Ask your dealer, or write. . . .

WOODFORD HYDRANT CO.
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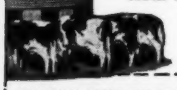

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little. Their low initial cost is a big point in favor of this type of brooding.

How serious is a power interruption and what should be done if one occurs?

Loss of light and heat due to power outages may cause very young chicks to pile up and smother. However, as the chicks grow older, power outages become less and less serious. Actual experiences of users indicate that outages are not a serious problem.

How does the mortality rate for infrared compare to other types of brooding?

There is no significant difference. Good management seems to be the answer to a low mortality rate with any method of brooding. It can be attributed more to the hardiness of the chicks, sanitation, and feeding practices than to the source of heat used in the actual brooding.

Does a chick brooded with infrared require more feed?

No, they do not. Comparative tests have shown the same feed consumption per chick per pound of gain for various methods of brooding.

When brooding with infrared what can be done to prevent water from freezing?

Simply place the water containers at the edge of the comfort zone or use electric water warmers. Never place fountains so that water will be splashed on the lamps.

Does infrared increase cannibalism?

No. The light from the infrared lamp by itself will not increase cannibalism.

Does infrared bother chickens' eyes?

No, infrared light is not harmful to the chickens' eyes.

You may not have found the answers to all your questions concerning the brooding of chicks with infrared lamps included in this article. Among other things, the area in which you live will govern, to a great extent, the quantity of heat required. Your County Agent or your power supplier can furnish you with further localized recommendations.

—I'm proud I am a farmer!—

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Build Your Own Hotbed

TWO types of heating wire are available for heating hotbeds. The type first on the market is a special nickel-chromium wire insulated with asbestos and covered with a lead sheath for protection. This hotbed cable is now generally sold in lengths of 60 or 120 feet. The reason for these lengths is that they are right for use on 115 volt or 230 volt current. If the cable is shorter than 60 ft. on a 115 volt circuit, it gets too hot for the insulation and for proper heat and moisture distribution. The same is true with lengths shorter than 120 ft. on 230 volts. Longer cables, less heat. A length of 60 ft. is also just right for a two sash (6' x 6') bed. The cable can be secured in any lengths for special jobs, but it must usually be ordered early so it can be shipped from the factory. Lead sheathed hotbed cable is ¼ to ⅜ inches in outside diameter.

The second type of cable is plastic insulated. The same kind of heating wire is used, but it has a different insulating cover. The cables are smaller in diameter than lead sheathed cable and are made in different sizes for beds from one sash up.

Just remember that with all heating cable, if you make it shorter you will use more electricity and get more heat—and that the cables are not designed for the higher temperatures.

The ends of the cable should be brought up out of the soil and protected from moisture to prevent current leakage. Breaks in cable insulation may cause current leakage with accompanying shocks and waste of electricity.

The illustration shows one method of placing cable in a hotbed. In this case it is 6 inches below the soil surface. The cable may also be laid right on the surface. It will give quicker heat in the bed, and more heat at the soil surface where the seeds are. The 6 inch depth is most common. A depth of 4 inches is better for sweet potato bedding. Keep in mind that wherever you have a heating cable, moisture will be evaporated from the soil. This must be replaced by watering.

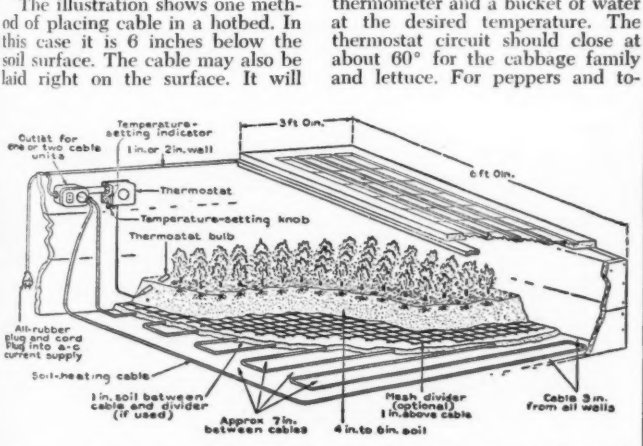
Thermostat Regulates Heat

Temperature in the bed is regulated in two ways. Excessive daytime heat from the sun is relieved by lifting the sash a couple of inches. Temperatures at night and on cold or cloudy days may be regulated by a thermostat which turns the electric heat on and off automatically. The thermostat may be set for the temperature desired. The thermostat bulb is usually pressed just into the surface soil of the bed.

In locating the hotbed, place it where the drainage is good, where it will have protection from cold winds, with exposure to the sun from the south, and accessible to water and electricity. Be sure the wires supplying it are large enough to prevent excessive voltage drop. The bed may be dug down so the cable is 6 inches or more below the general ground surface; or, if drainage is poor the bed may be built above surface and banked around the outside.

Frames and sash should be tight to exclude wind and save heat. If you build and manage right, the sun will furnish most of the heat, with electricity pinch-hitting at night.

Adjust the thermostat with a thermometer and a bucket of water at the desired temperature. The thermostat circuit should close at about 60° for the cabbage family and lettuce. For peppers and to-


Outlet for one or two cable units
Temperature-setting indicator
1 in. or 2 in. wall
3 ft 0 in.
6 ft 0 in.
Thermostat
Temperature-setting knob
Thermostat bulb
All-rubber plug and cord Plug into a-c current supply
Soil-heating cable
1 in. soil between cable and divider (if used)
Approx 7 in. between cables
Mesh divider (optional) 1 in. above cable
4 in. to 6 in. soil
Cable 3 in. from all walls

Cut-away view of 6' x 6' hotbed construction. Note that each end of the 60' cable is attached to the plug. Double outlet provides for two 6' x 6' sections with one thermostat. Cable may be 6" below or on the surface.

Poultry Pete Says:
YOU'LL BROOD BETTER BIRDS WITH THE ORIGINAL, DEPENDABLE

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Patent Appl'd For

- Cardinal 4-lamp cluster makes perfect heat pattern for proper infrared brooding.
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CARDINAL Model CB-20 (designed for brooder house with central thermostat control) with 6' suspension chain (less lamps).....$7.85
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See Your Dealer or Write for Literature.

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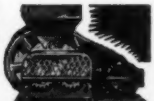
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HOL-DEM delivers the wallop in *all* soil and weather conditions. "Weed Kutter" feature kills weeds on contact! 5 Year guarantee—satisfaction or your money back. See HOL-DEM before you risk your stock on makeshift fencers. Write for information. DEALERS WANTED

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matoes it should close at around 70°. Should you wish to grow both types of plants in the bed at the same time, terrace the soil in the tomato section about 6 inches higher than in the cabbage section. It is warmer higher up.

If you are interested in saving electricity, keep the beds tight. Cover them at night. Double glazed sash will help. And remember that building, hedge or fence on the north as a windbreak.

More than 30% of the world's railway mileage is in the United States.

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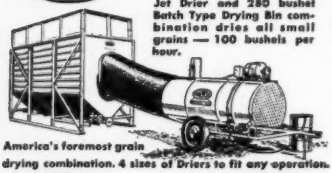
Jet Drier and 280 bushel Batch Type Drying Bin combination dries all small grains — 100 bushels per hour.



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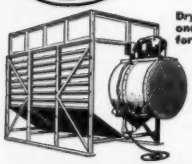

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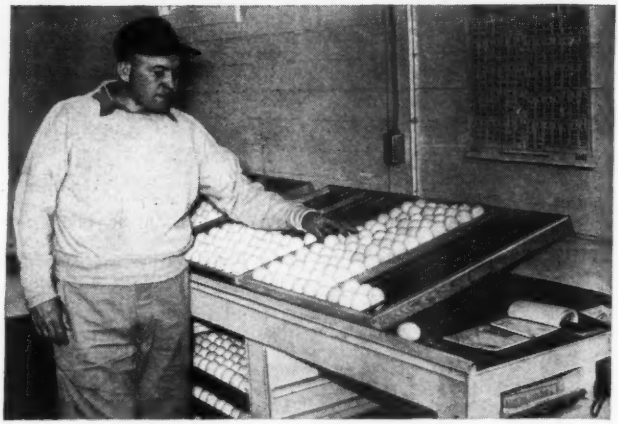

Raymond Reed sorts turkey eggs on his home-made table. Note edging along front to keep trays from sliding, and also wooden strip along wall to hold trays at proper slant for easy working. Small shelves constructed on sides to hold pencils and other small equipment may be seen. Note storage space for trays underneath table.

Turkey grower Raymond Reed, Essex County, Andover, Massachusetts saves plenty of time with his home-made turkey egg grader and candling table.

Constructed entirely of wood and located in the incubator room, this table has a wooden top covered with easily cleaned fiberboard. Table width is less than that of an incubator tray. Reed nailed a moulding to the front to avoid slipping trays, and tacked a board along the rear so trays would set at just the right angle to enable sorting and candling without strain.

A 40-watt fluorescent lamp is installed in the center of the table. Trays are pushed slowly over this light when candling. Lamp is covered with a sliding strip of fiberboard to keep it clean and avoid breakage.

Underneath, there is plenty of room in which incubator trays may be stacked when not in use or when ready for the incubator. On the ends of the table are small built-in shelves for literature, pencils and other necessary equipment.

Reed constructed this table long enough to give him plenty of room in which to work.

A 40-watt fluorescent lamp mounted cross-wise in table top. Note fiberboard slide partially inserted in slot above bulb and at left that covers it to avoid breakage and excess dirt. Underside of bulb is enclosed. Wooden table top is covered with easily cleaned fiberboard.

FUN FOR ALL—the whole family can take part in this contest. CASH PRIZES will be awarded for the best suggestions for a last line to complete the verse at the bottom of this page.

What Would YOU Say?

Rhyme Contest

Awards for January Contest

The winners of the January contest will be announced in our next issue (April 1952). Printing requirements forced us to put this issue on the press before the January contest entries could be judged.

RULES—MARCH CONTEST

Seven cash prizes will be awarded for the best last line to complete the verse in the coupon below. Your suggestion should rhyme with the second line.

The first prize will be $25 cash; the second prize $10. In addition, five consolation prizes of $3 each will be awarded for the best last line furnished.

In case of a tie, each winning contestant will receive the full cash prize to which he or she is entitled.

All members of the farm family to whom this magazine was sent may enter but each contestant may submit only one line.

Question "A" must be answered.

Entries must be sent to the Contest Editor, ELECTRICITY ON THE FARM Magazine, 8 So. Dearborn Street, Chicago 3, Ill., before April 1.

The decision of the judges is final and all entries become the property of ELECTRICITY ON THE FARM Magazine.

Winning names and entries will be announced in the June-July 1952 issue.

An electric water heater
Is as safe as it can be
Put one in the dairy
? ? ? ? ? ?

Send your entry on the coupon or make out a similar form on a plain sheet of paper or government postcard.

My suggestion for a fourth line to the above verse is:

.....

(A) What are the first four electrical farm machines or home appliances that you plan to buy?

1..... 3.....

2..... 4.....

My name is.....

R.F.D......*Post Office*.....

County.....*State*.....

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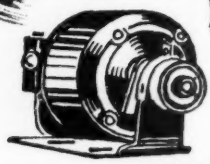
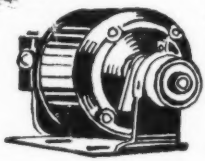
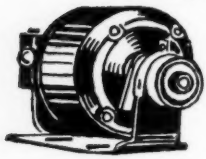
I can do practically any odd job around your farm—and I'll work for just a few cents a day."



"Here are some of the things I'll do for you: I'll run your corn sheller, your grindstone, air compressor, and concrete mixer. I'll sharpen your mower blades, turn your ice cream freezer, and do countless other jobs for you."



"Who am I? I'm that little ½ horsepower portable electric motor you need to relieve you from those slow, tiresome hand operations that eat up your profits."



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